Supreme Court, U.S.
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No. _____
In the Supreme Court of the United States

STATE OF MICHIGAN, *et al.*,

Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

On Petition for a Writ of Certiorari
to the United States Court of Appeals
for the District of Columbia Circuit

PETITION FOR A WRIT OF CERTIORARI

STATE OF ALABAMA,
ex rel. BILL PRYOR
Attorney General

Tommy E. Bryan
Assistant Attorney General
The State of Alabama and
Associate General Counsel
Alabama Department of
Environmental Management
P. O. Box 301463
Montgomery, Alabama
36130-1463
(334) 271-7855

JENNIFER M. GRANHOLM
Attorney General

Thomas L. Casey
Solicitor General
Counsel of Record
P. O. Box 30212
Lansing, Michigan 48909
(517) 373-1124

Alan F. Hoffman
Assistant Attorney General
Attorneys for State of Michigan

[additional counsel listed on inside cover]

144pp

Thomas H. Zerbe
Senior Counsel
Office of Legal Services
Division of Environmental Services
1356 Hansford Street
Charleston, West Virginia 25301
(304) 558-9160
Counsel for West Virginia

Commonwealth of Virginia

By Counsel
Mark L. Earley
Attorney General

Roger L. Chaffe
Senior Assistant Attorney General

Stewart T. Leeth*
Assistant Attorney General
900 East Main Street
Richmond, Virginia 23219
(804) 786-6957
*Counsel of Record

CHARLES M. CONDON
Attorney General of South Carolina
KENNETH P. WOODINGTON
Senior Assistant Attorney General
CHRISTIE NEWMAN BARRETT
Assistant Attorney General
South Carolina Office of the Attorney General
P. O. Box 11549
Columbia, South Carolina 29211
(803) 734-3736

Samuel L. Finklea, III
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201
(803) 898-3349

QUESTION PRESENTED

Whether, under § 110 of the Clean Air Act, 42 U.S.C. § 7410, the cost of reducing air pollutant emissions is a relevant and proper factor for the United States Environmental Protection Agency ("EPA") to use in determining whether a state is significantly contributing to another state's failure to attain a national ambient air quality standard.

PARTIES TO THE PROCEEDING

1. Petitioners Michigan, West Virginia, Virginia, Alabama, and South Carolina were petitioners in the court of appeals along with:

In No. 98-1497, State of Michigan, Michigan Department of Environmental Quality, and State of West Virginia, Division of Environmental Protection

In No. 98-1588, State of Ohio

In No. 98-1596, Commonwealth of Virginia

In No. 98-1615, State of Alabama, *ex rel* Bill Pryor, Attorney General

In No. 98-1617, State of Indiana and Indiana Department of Environmental Management

In No. 98-1619, State of North Carolina

In No. 98-1621, State of South Carolina

In No. 98-1499, United Mine Workers of America

In No. 98-1500, Appalachian Power Company, *et al.*, consisting of:

Appalachian Power Company;
Baltimore Gas and Electric Company (now referred to as Constellation Power Source Generation, Inc.);
Carolina Power & Light Company;
Central and South West Services, Inc.
Central Power and Light Company
Public Service Company of Oklahoma
Southwestern Electric Power Company
West Texas Utilities Company
Central Illinois Light Company
Central Illinois Public Service Company
CINergy
Columbus Southern Power Company;
Commonwealth Edison Company
Consumers Energy Company
Dayton Power and Light Company, The
Detroit Edison Company, The
Duke Energy Company
Florida Power Corporation
Illinois Power Company
Indiana Michigan Power Company
Jacksonville Electric Authority

Kentucky Power Company
Kentucky Utilities Company
Louisville Gas and Electric Company
Minnesota Power Company
Monongahela Power Company d/b/a
Allegheny Power System, Inc.
Northern Indiana Public Service Company
Oglethorpe Power Corporation
Ohio Power Company
Ohio Valley Electric Corporation
Oklahoma Gas & Electric Company
Otter Trail Power Company
PacifiCorp Electric Operations
Plains Electric Generation & Transmission
Cooperative, Inc.
Potomac Edison Company, The
d/b/a Allegheny Power System, Inc.
Potomac Electric Power Company
Public Service Company of New Mexico
Salt River Project
South Carolina Electric & Gas Company
Southern Company
Alabama Power Company
Georgia Power Company
Gulf Power Company
Mississippi Power Company
Savannah Electric and Power Company
Tampa Electric Power Company
Tucson Electric Company
Union Electric Company
Virginia Power
West Penn Power Company
d/b/a Allegheny Power System, Inc.
Edison Electric Institute
National Rural Electric Cooperative
Association
American Public Power Association
In No. 98-1500, Duquesne Light Company
In No. 98-1501, Midwest Ozone Group
In No. 98-1502, West Virginia Chamber of Commerce
In No. 98-1504, National Mining Association

In No. 98-1518, West Virginia Manufacturers Association

In No. 98-1556, City of Springfield, Missouri through the Board of Utilities, d/b/a City Utilities of Springfield, Missouri

In No. 98-1567, Kansas City Power & Light Company

St. Joseph Light & Power Company

The Empire District Electric Company

Utilicorp United, Inc.

City of Independence, Missouri

Associated Electric Cooperative, Inc.

In No. 98-1573, Indianapolis Power & Light Company

In No. 98-1585, The Alabama Forestry Association, Inc. by and through its section The Alabama Pulp and Paper Counsel

In No. 98-1590, Dairyland Power Cooperative

In No. 98-1598, South Carolina Public Service Authority doing business as Santee Cooper

In No. 98-1601, American Municipal Power-Ohio

In No. 98-1602, Fort James Operating Company

Gilman Paper Company

Rayonier Inc.

Savannah Electric & Power Company

Southeast Paper Manufacturing Company

International Paper Company

In No. 98-1608, PP&L, Inc.

In No. 98-1609, Council of Industrial Boiler Owners

In No. 98-1611, Network for Workable Air Policies

In No. 98-1616, Georgia Coalition for Sound Environmental Policy, Inc.

In No. 98-1618, Interstate Natural Gas Association of America

In No. 99-1070, Appalachian Power Company, *et al.*

In No. 99-1093, Wisconsin Paper Council

Madison Gas and Electric Company

Northern States Power Company

Wisconsin Public Service Corporation
Wisconsin Manufacturers & Commerce

2. The following Party was a Respondent in the consolidated proceeding, the judgment in which review is sought.

U.S. Environmental Protection Agency

3. The following Parties were Intervenors in the consolidated proceeding, the judgment in which review is sought.

Appalachian Power Company, *et al.*

Dairyland Power Cooperative

Virginia Manufacturers Association

South Carolina Public Service Authority d/b/a Santee Cooper

Detroit Public Lighting
Grand Haven Board of Light and Power
Holland Board of Public Works
Lansing Board of Water & Light
Marquette Board of Light and Power
Michigan South Central Power Agency; and
City of Wyandotte Department of Municipal Service

GPU Generation, Inc.

American Gas Association

Interstate Natural Gas Association of America

Network for Workable Air Policies

Business Council of Alabama

Michigan Manufacturers Association
State of Wisconsin

State of New York

State of Connecticut
State of Maine
State of New Hampshire
Commonwealth of Pennsylvania
State of Rhode Island
State of Vermont; and
Commonwealth of Massachusetts

State of Maryland

Consolidated Edison Co. of New York, Inc.
KeySpan Generation LLC
Niagara Mohawk Power Corporation
PECO Energy Company
Public Service Electric and Gas Company
Rochester Gas & Electric Corporation; and
PG&E Generating

Natural Gas Supply Association; and
Sempra Energy

Associated Industries of Massachusetts
New England Council; and
New Jersey State Chamber of Commerce

PP&L, Inc.
Atlantic City Electric Company; and
Delmarva Power & Light Company

Natural Resources Defense Council
Environmental Law & Policy Center of the Midwest
Clean Air Task Force
American Lung Association of Metropolitan Chicago
Appalachian Mountain Club
Citizens Action Coalition of Indiana, Inc.
Clean Air Council
Environmental Defense Fund
Group Against Smog and Pollution
Hoosier Environmental Council
Illinois Environmental Council
Izaak Walton League of America

Legal Environmental Assistance Foundation
Michigan Environmental Council
National Environmental Trust
Natural Resources Council of Maine
New York Public Interest Research Group
Ohio Citizen Action
Ohio Environmental Council
U.S. Public Interest Research Group; and
Wisconsin's Environmental Decade Institute

Province of Ontario, Canada
Norman W. Sterling, Minister of the Environment, Province of Ontario
Charles A. Harnick, Attorney General of the Province of Ontario; and
Christopher Carl Haromy

4. The following were *Amici* in the consolidated proceeding, the judgment in which review is sought.

Toledo Metropolitan Area Council of Governments

North Carolina Citizens for Business and Industry

South Carolina Chamber of Commerce
Environmental Management Association of South Carolina; and
South Carolina Manufacturers Alliance

Government of Canada

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PETITION FOR WRIT OF CERTIORARI

The states of Michigan, Virginia, West Virginia, South Carolina, and Alabama ("Petitioners"), respectfully petition for a writ of certiorari to review the judgment of the United States Court of Appeals for the District of Columbia Circuit. *Michigan v. EPA*, 213 F.3d 663 (D.C. Cir. 2000).

OPINIONS BELOW

The majority opinion of the court of appeals and Circuit Judge Sentelle's dissenting opinion (App. 1a-54a) are reported at 213 F.3d 663 (D.C. Cir. 2000), 341 U.S. App. D.C. 306. The orders on the petition for panel and *en banc* rehearing and the court of appeals' mandate are included in the Appendix (App. 55a-60a).

JURISDICTION

The decision of the court of appeals was entered on March 3, 2000. The petitions for rehearing and rehearing *en banc* were denied June 22, 2000. The Court's mandate issued on September 13, 2000. Petitions for writ of certiorari were originally due on September 20, 2000. Upon motion of these Petitioners, this Court, on September 8, 2000, granted an extension until October 20, 2000 (App. 61a). The jurisdiction of this Court is invoked under 28 U.S.C. § 1254(1).

CONSTITUTIONAL, STATUTORY AND REGULATORY PROVISIONS INVOLVED

The relevant sections of the Clean Air Act, 42 U.S.C. § 7401 *et seq.*, are set forth below:

Clean Air Act § 110(a)(2)(D), 42 U.S.C. § 7410(a)(2)(D):

> (a) Adoption of plan by State; submission to Administrator; content of plan; revision; new sources; indirect source review program; supplemental or intermittent control systems--

(2) Each implementation plan submitted by a State under this chapter shall be adopted by the State after reasonable notice and public hearing. Each such plan shall -

(D) contain adequate provisions–

(i) prohibiting, consistent with the provisions of this subchapter, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will -

(I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard, or

(II) interfere with measures required to be included in the applicable implementation plan for any other State under part C of this subchapter to prevent significant deterioration of air quality or to protect visibility,

(ii) insuring compliance with the applicable requirements of sections 7426 and 7415 of this title (relating to interstate and international pollution abatement).

Clean Air Act § 110(k)(5), 42 U.S.C. § 7410(k)(5):

(k) Environmental Protection Agency action on plan submissions

(5) Calls for plan revisions

Whenever the Administrator finds that the applicable implementation plan for any area is substantially inadequate to attain or maintain the relevant national ambient air quality standard, to mitigate adequately the interstate pollutant transport described in section 7506a of this title or section 7511c of this title, or to otherwise comply with any requirement of this chapter, the Administrator shall require the State to revise the plan as necessary to correct such inadequacies. The Administrator shall

> notify the State of the inadequacies, and may establish reasonable deadlines (not to exceed 18 months after the date of such notice) for the submission of such plan revisions. Such findings and notice shall be public. Any finding under this paragraph shall, to the extent the Administrator deems appropriate, subject the State to the requirements of this chapter to which the State was subject when it developed and submitted the plan for which such finding was made, except that the Administrator may adjust any dates applicable under such requirements as appropriate (except that the Administrator may not adjust any attainment date prescribed under part D of this subchapter, unless such date has elapsed).

Due to its length, only pertinent portions of the EPA rule at issue in this case, 63 Fed. Reg. 57,356 *et seq.*, are set forth in the Appendix at App. 62a-98a. With the Clerk of the Court's permission, complete copies of the rule have been lodged with the Clerk simultaneously with the filing of the petition for writ of certiorari filed by Appalachian Power Company dated September 20, 2000 and captioned *Appalachian Power Company, et al. v. U.S. E.P.A*, No. 00-445.

STATEMENT

Petitioners were among many who petitioned the United States Court of Appeals for the District of Columbia Circuit under § 307(b) of the federal Clean Air Act ("CAA" or "the Act"), 42 U.S.C. § 7607(b), for review of a final EPA rule calling for 22 states and the District of Columbia ("23 States") to revise their state implementation plans ("SIPs") to mitigate the interstate transport of ozone pursuant to § 110 of the CAA, 42 U.S.C. § 7410.[1]

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[1] Henceforth, citations to the Act are to sections of the statute; Table of Authorities includes parallel citations to the United States Code.

1. The Clean Air Act

The CAA created a statutory framework of "cooperative federalism" by defining separate roles for the states and the federal government, acting through the EPA. The EPA is responsible for promulgating NAAQS for air pollutants, while the states are responsible for designing SIPs to achieve those NAAQS. *See* §§ 107, 109, and 110. Each state is required to submit its plan to the EPA which, in turn, "shall approve such submittal as a whole if it meets all of the applicable requirements" of the CAA. *See* §§ 110(a)(2) and 110(k)(3).

2. Ozone Transport Problem

Although the EPA's final rule is intended to reduce the interstate transport of ozone, the rule targets emissions of nitrogen oxides ("NOx"), which are precursors to the formation of ozone. As the EPA explained:

> Ground-level ozone, the main harmful ingredient in smog, is produced in complex chemical reactions when its precursors, volatile organic compounds (VOC) and NOx react in the presence of sunlight. The chemical reactions that create ozone take place while the pollutants are being blown through the air by the wind, which means that ozone can be more severe many miles away from the source of emissions than it is at the source.

63 Fed. Reg. 57,359 (1998) (App. 66a).[2]

3. The NOx SIP Call

One of the statutory requirements for a SIP is that it "contain adequate provisions . . . prohibiting . . . any source or other type of emissions activity within the state from emitting

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[2] Volatile organic compounds (VOC) reductions are not addressed in the NOx SIP Call because the EPA has adopted other national measures for reducing VOC, *see* 63 Fed. Reg. at 57,363 (1998) (App. 70a-73a), and the EPA believes VOC controls are most effective locally, while NOx controls are more effective in addressing regional ozone problems. *See* 62 Fed. Reg. at 60,320 (1998).

any air pollutant in amounts which will . . . contribute significantly to nonattainment in . . . any other state with respect to any such" NAAQS. § 110(a)(2)(D). If, after approving a SIP, the EPA "finds the applicable implementation plan for any area is substantially inadequate . . . to mitigate adequately . . . interstate pollutant transport . . . or to otherwise comply with any requirement" of the CAA, "the Administrator shall require the State to revise the plan as necessary to correct such inadequacies." § 110(k)(5). Using this authority as its justification, the EPA issued its final rule calling for the 23 States to revise their SIPs to mitigate their interstate transport of ozone in order to comply with § 110(a)(2)(D)'s prohibition of significant pollutant contributions. *See Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone; Rule*, 63 Fed. Reg. 57,356, *et seq.* ("NOx SIP Call") (1998).

To address NOx emissions, the EPA's final rule establishes a "NOx budget" for each of the 23 States found to be contributing significantly to the failure of a downwind state to attain the NAAQS for ozone. *See* 63 Fed. Reg. at 57,377-78 (1998) (App. 76a-83a). The NOx budgets set the level of NOx emissions each state is allowed to emit. *See id.*

The first step in the EPA's process was to determine whether the amounts of NOx emitted by each state "contribute significantly" to downwind nonattainment. To do so, the EPA adopted a multi-factor test that considered:

> 1) the overall nature of the ozone problem (i.e., "collective contribution");
> 2) the extent of the downwind attainment problems to which the upwind State's emissions are linked, including the ambient impact of controls required under the CAA or otherwise implemented in the downwind areas;
> 3) the ambient impact of the emissions from the upwind State's sources on the downwind nonattainment problems; and
> 4) *the availability of highly cost effective control measures for upwind emissions.*

63 Fed. Reg. at 57,376 (emphasis added) (1998) (App. 73a). "These factors were the primary components in EPA's consideration." *Id.* "The first three of these factors are related to air quality; the fourth is related to costs." *Id.* In actuality, the EPA used the first three factors to determine which states were to be subject to the rule. The fourth factor was used exclusively by EPA to determine each state's significant contribution of NOx to the downwind states nonattainment of the NAAQS for ozone.

Under the fourth cost-related factor, the EPA calculated NOx budgets for each state by determining the amounts of NOx emissions that may be eliminated by each state through controls that are considered to be "highly cost effective." *See id.* "The EPA determined that an average of approximately $2,000 per ton removed is highly cost effective." *Id.* In the final rule, the EPA explained that:

> Because EPA had . . . determined that the NOx emissions from the affected upwind States have a large and/or frequent impact on downwind nonattainment or maintenance problems, EPA concludes that the amount of NOx emissions from those States that can be eliminated through application of highly cost-effective control measures contributes significantly to nonattainment or maintenance problems downwind.
>
> Under Section 110(a)(2)(D)(i)(I), the SIP must include "adequate provisions prohibiting" sources from emitting these "amounts." *Because no highly cost-effective controls are available to eliminate the remaining amounts of NOx emissions, EPA concludes that those emissions do not contribute significantly to downwind nonattainment or maintenance problems.*

63 Fed. Reg. at 57,378 (emphasis added) (1998) (App. 79a). Accordingly, the remaining amounts of NOx emissions would constitute a state's NOx budget of allowable emissions.

4. The Decision of the Court of Appeals

In approving the EPA's cost-based determination of significant interstate pollutant contributions, the majority of the court of appeals panel stated:

> In sum, there is nothing in the text, structure, or history of § 110(a)(2)(D) that bars EPA from considering cost in its application.

Michigan, 213 F.3d 663, 679. The majority found that "the fundamental dispute is over the clarity of the phrase "contribute significantly." *Id.*, 213 F.3d at 677. The court went on to conclude that the statute's use of the word "significantly" allowed the EPA to consider the costs of emission reductions. *See id.*, 213 F.3d at 677-79. The court also found that the petitioners had failed to point to evidence in the text, statutory structure or legislative history of the CAA "suggesting that cost considerations should be barred," *id.*, 213 F.3d at 679, or showing "the requisite 'clear congressional intent to preclude consideration of cost.'" *Id.* (*quoting Natural Resources Defense Council v. EPA*, 824 F.2d 1146, 1163 (D.C. Cir. 1987) (*en banc*)).

Petitioners filed a joint petition for rehearing and rehearing *en banc* with the court of appeals. On June 22, 2000, the court denied both requests with Judge Sentelle voting in favor of the petitioner's requests.

REASONS FOR GRANTING THE PETITION

The court of appeals has decided an important question of federal law under the CAA in a way that conflicts with the relevant decisions of this Court in *Union Electric Co. v. EPA*, 427 U.S. 246 (1976) ("*Union Electric*") and *Train v. NRDC*, 421 U.S. 60 (1976) ("*Train*"). In doing so, the court of appeals ignores the clear intent of Congress underlying the CAA's interstate pollutant transport provision. The court's decision also conflicts with its previous interpretations of the

CAA in *American Trucking Ass'ns v. EPA*, 175 F.3d 1027, *modified on reh'g*, 195 F.3d 4 (D.C. Cir. 1999) ("*ATA*"), *cert. granted*, 120 S.Ct. 2003 (No. 1257, 1999 Term) and *Lead Industries Ass'n v. EPA*, 647 F.2d 1130, 1148-51 (D.C. Cir.), *cert. denied*, 449 U.S. 1042 (1980) "*Lead Industries*"). This Court should grant this petition to resolve these serious conflicts and to remand an EPA rule that exceeds the EPA's statutory authority.

In crafting the CAA, Congress was acutely aware of the Act's potential economic ramifications. The purpose of protecting the public health, however, was expressly intended to override considerations of costs and technology. This Court even went so far as to say at one point in *Union Electric* that where Congress intended cost and technology considerations, it expressly provided for them. *See Union Electric*, 427 U.S. at 257, n. 5. Although, as discussed later, that statement was appropriately modified in other parts of the opinion, there is no room for consideration of costs under the transport provision of § 110(a)(2)(D). By allowing the EPA to insert cost considerations into § 110(a)(2)(D)(i)(I), the court of appeals defeats a clear congressional intent to create "technology-forcing" legislation that places public health above the type of "highly cost effective" means that the EPA now wrongly elevates to supreme status.

The EPA's consideration of costs under § 110(a)(2)(D) is wholly inconsistent with the position the EPA adopted before this Court in the EPA's petition for a writ of certiorari in *ATA*.[3] In that case, the EPA stated that it "cannot consider the economic or technological feasibility of attaining NAAQS" under § 109. *See* EPA's petition for a writ of certiorari at 15 (citing *Lead Industries* at 1148-51: "the statute and its legislative history make clear that economic considerations play no part in the promulgation of ambient air quality standards under Section 109"). The EPA's reliance on *Lead Industries* is significant because that decision is ostensibly based upon this Court's precedents in *Train* and *Union Electric*, which held that the "technology-forcing" requirements of the Act "are expressly designed to force regulated sources to develop pollution control devices that might at the time

[3] The EPA's petition was granted by this Court on May 22, 2000. The States of Michigan, Ohio and West Virginia are also parties to that proceeding.

appear to be economically or technologically infeasible." *See Union Electric*, 427 U.S. at 257; *Train*, 421 U.S. at 90-91; *Lead Industries*, 647 F.2d 1149. *Union Electric*, moreover, found that none of the original requirements of § 110(a)(2) appear to permit the EPA to consider technological and economic infeasibility. *See Union Electric*, 427 U.S. at 257;[4] *see also Lead Industries*, 647 F.2d at 1149, n. 37 ("if Congress had wanted the economics of pollution control considered it would have so provided in § 110"). Yet, the EPA proceeded to consider the "economics of pollution control" under the interstate pollution transport provision while relying on *Union Electric's* progeny, in *ATA*, to avoid the consideration of costs under § 109. Clearly, the court of appeals decision in *Michigan* is inconsistent with its decision in *ATA*. *See Michigan*, 213 F.3d at 679; *ATA*, 175 F.3d at 1038. In *ATA*, the court agreed with the EPA that the agency is barred from the consideration of costs, even though those costs are logically relevant to the

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[4] In *Union Electric Co. v. EPA*, 427 U.S. 246 (1976), the Court held that, in the absence of express congressional intent, economic and technological feasibility shall not be considered by EPA in evaluating state implementation plans (SIPs). *See Union Electric*, 427 U.S. at 257. Nevertheless, the Court did suggest that in evaluating whether a state's SIP included provisions for attaining the primary air quality standards "as expeditiously as practicable," as required under § 110(a)(2)(A)(i), the EPA "may consider whether it is economically or technologically possible for the state plan to require more rapid progress than it does." *Union Electric*, 427 U.S. at 265, fn 13. This ancillary and limited consideration of costs, however, does not elevate cost considerations to the level of a minimum standard for a SIP nor can it be inferred that Congress intended such indirect considerations to creep into the other standards under § 110(a)(2). In addition, the *Union Electric* Court held:

> In short, the [1970] Amendments offer ample opportunity for consideration of claims of technological and economic infeasibility. Always, however, care is taken that consideration of such claims will not interfere substantially with the primary goal of prompt attainment of the national standards.

Id., 427 U.S. at 268. For example, § 110(a)(2)(A)'s ancillary consideration of costs helped the EPA, if appropriate, to force a state to attain a NAAQS more promptly than the 3-year, technology-forcing deadline mandated in § 110(a)(2)(A). By contrast, the 1970 interstate transport provision, § 110(a)(2)(E), contained no language that explicitly or implicitly provided for any primary or ancillary consideration of economic or technological feasibility. And the amendments leading to § 110(a)(2)(D) did not change this aspect of the CAA's interstate pollutant transport provision. In the instant matter, not only was the EPA's consideration of cost impermissible, it also interfered substantially with the downwind states' prompt attainment of the national standards by undermining the statute's prohibition of significant contributions by the upwind states.

decision of where to "draw the line" for the ozone NAAQS.[5] In *Michigan*, the court approved the EPA's claim that the agency is free to consider costs, even though those costs are *irrelevant* to determining the "amounts which . . . will contribute significantly" to the nonattainment of NAAQS by downwind states. This petition should be granted to fully resolve these inconsistent decisions and to remand a rule based on wholly irrelevant factors.

The decision in *Michigan* also dismantles the CAA's statutory framework of "cooperative federalism" by approving the EPA's disguised intrusion on the states' primary obligation and right to develop SIPs to bring the states into compliance with the requirements of the CAA. As a result, the significant pollutant contributions that Congress expressly prohibited in § 110(a)(2)(D) will continue by some states while other states have their emissions limited to an extent that is grossly out of proportion to their contributions. By pursuing its own "overall notions of economic fairness," the EPA charts a new and unauthorized course for the CAA that falls short of prohibiting the emission of air pollutants "in amounts which will . . . contribute significantly" to the nonattainment of NAAQS by downwind States.

It is clear that Congress required each state to eliminate its own significant contributions, regardless of the costs. The EPA, as affirmed by the court of appeals, now seeks to legislate a different policy for nearly half of the nation. Regardless of what one might think of the choices Congress has made to address air quality problems, this Court has repeatedly held that it is not for an administrative agency or the courts to second-guess that choice. This petition should be granted to correct the executive and judicial branches' trespass upon the exclusive province of Congress.

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5 Ozone is a "non-threshold" pollutant. There is no threshold amount for ozone above which deleterious health effects are certain and below which no health effects are known. "EPA regards ozone definitely . . . as [a] non-threshold [pollutant], *i.e.*, [one that has] some possibility of some adverse health impact (however slight) at any exposure level above zero." *ATA*, 175 F.3d at 1034, *citing* Ozone Final Rule, 62 Fed. Reg. at 38,863 (1997).

1. Under the plain language of § 110(a)(2)(D)(i)(I), the cost of reducing air emissions is neither a relevant nor proper factor for the EPA to consider in determining the "amount" of a state's emissions that "contribute significantly" to another state's failure to attain a national air quality standard.

In the CAA, Congress expressly called for the EPA and the states to prohibit "any source or other type of emissions activity within [a] State . . . from emitting *any air pollutant in amounts which will . . . contribute significantly*" to another state's failure to attain national ambient air quality standards. § 110(a)(2)(D)(i)(I) (emphasis added). The court of appeals confirmed that "the fundamental dispute is over the clarity of the phrase 'contribute significantly.'" *Id.*, 213 F.3d at 677. The court went on to conclude that the statute's use of the word "significantly" allowed the EPA to consider the costs of emission reductions. *See id.*, 213 F.3d at 677-79.

As Judge Sentelle points out in his dissent, the meaning of the statute is plain:

> Given § 7410(a)(2)(D)(i)(I)'s mandate as a whole, it becomes clear that EPA and the majority have to contort the statute's language by isolating the term "significantly" and ignoring the terms "air pollutant," "amounts," and "contribute" in order to work cost considerations into the statute. I just cannot agree with such an unusual exercise in statutory construction.

Michigan, 213 F.3d at 696-97 (quotation marks added). He also explained that:

> Unlike the majority's journey through this regulatory scheme, mine is neither lengthy nor complex, because I get off at the first stop.

Michigan, 213 F.3d at 695. "The first stop" Judge Sentelle referred to was a rational reading of the plain language of the statute's text:

> It would appear to me that Congress clearly empowered the EPA to base its actions on amounts of pollutants, those amounts to be measured in terms of significance of contribution to downwind attainment. Instead, EPA has chosen, doubtless in the pursuit of beneficent ends, to assert authority to require the SIPs to contain provisions based not on the amounts of pollutants, nor even on the relative significance of the contributions of such pollutants to downwind nonattainment, but on the relative cost effectiveness of alleviation. I agree with the State petitioners that it is undeniable that EPA has exceeded its statutory authority.
>
> * * * *
>
> I marvel at an interpretation that permits cost effectiveness to find a place in a statutory provision addressing amounts of air pollutant contribution. While the contribution must affect nonattainment significantly, no reasonable reading of the statutory provision in its entirety allows the term significantly to springboard costs of alleviation into EPA's statutorily-defined authority.

- *Michigan*, 213 F.3d at 695-97 (Sentelle, J., dissenting) (quotation marks added) (App. 51a-54a).

Congress instructed the EPA to look at pollutant amounts, not dollar amounts. Based on its own misguided notion of economic fairness, EPA, contrary to the plain language of the Act, chose to determine each state's required NOx reduction based solely on costs. Because the cost of alleviation is wholly irrelevant to determining the pollutant amounts that are causing the problem in need of alleviation, the rule is not "founded on a reasoned evaluation 'of the relevant factors'" and, therefore, is arbitrary and capricious.

See Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 378 (1989).

The plain language of § 110(a)(2)(D)(i)(I) should have resolved this matter at "the first stop." If it is necessary to look beyond the language of the statute itself, the legislative history of the term "contribute significantly" confirms the error of the statutory interpretation by EPA and the court of appeals. In the 1990 amendments, Congress explained its change from the term "prevent attainment" to "contribute significantly to nonattainment":

> For interstate pollution to violate current law, it must "prevent attainment." Since it may be impossible to say that any single source or group of sources is the one which actually prevents attainment, the bill changes "prevent attainment or maintenance" to "contribute significantly to nonattainment or interfere with maintenance by," thus clarifying when a violation occurs.

S. Rep. No. 228, 101st Cong., 1st Sess. 21 (1989), *as reported in* 1990 U.S.C.C.A.N. 3385, 3407. The term "contribute significantly" was intended by Congress to strengthen the prohibition on contributions to interstate pollution, not to allow some states to escape the Act's reach because their required emission reductions will cost more than $2,000/ton. There is no evidence of any congressional intent to inject cost considerations into § 110(a)(2)(D)(i)(I). This provision lacks any language that explicitly or implicitly authorizes economic considerations. The word "significantly" goes to the level of the impact and cannot reasonably be interpreted to allow the consideration of economic efficiency.

Despite the plain language of the statute, the rule provides that a state's significant contribution is not determined by the "amounts" of pollutants in its emissions as required by Congress. Instead, EPA declares that a state's significant contribution is the total amount of the state's emissions that can be eliminated for $2,000/ton or less. As a result, a state which is contributing a large amount of pollutants to another state's failure to attain air quality

standards will not have to reduce its emissions one iota if doing so will cost more than $2,000/ton. On the flip side, a state which is barely making any contribution is required to eliminate an amount of emissions that equals the total of all the emissions that would cost $2,000 or less to eliminate. Under EPA's view, it does not matter whether that amount is grossly out of proportion to a state's contribution. In effect, the EPA shifts the burden of cleaning the air from states with large pollutant contributions to states with small contributions simply because the latter happen to have cost-efficient reductions available in excess of what they need to eliminate their small contributions. In doing so, EPA greatly exceeds its statutory authority.

2. The decision below allowing EPA's consideration of costs conflicts with this Court's decision in *Union Electric* that, in the absence of congressional intent, economic and technological infeasibility shall not be considered by the EPA under § 110(a)(2).

In *Union Electric,* this Court reviewed the Clean Air Act Amendments of 1970 including the interstate pollution transport provision, § 110(a)(2)(E), from which the current § 110(a)(2)(D) evolved. *See Union Electric,* 427 U.S. at 250, n. 1. This Court expressly addressed the EPA's consideration of economic and technological feasibility under § 110(a)(2). *See id.,* 427 U.S. at 257. This Court examined all the requirements of § 110(a)(2) and held:

> After surveying the relevant provisions of the Clean Air Amendments of 1970 and their legislative history, we agree that Congress intended claims of economic and technological infeasibility to be wholly foreign to the Administrator's consideration of a state implementation plan.

Union Electric, 427 U.S. at 256.[6] As mentioned above, the original 1970 interstate pollution provision was § 110(a)(2)(E).[7] It was amended in 1977[8] and again, in 1990, when it was moved to § 110(a)(2)(D).[9] The history of this provision, as discussed in more detail below, is material, for in *Michigan*, the majority of the court of appeals panel stated:

> In sum, there is nothing in the text, structure, or history of § 110(a)(2)(D) that bars EPA from considering cost in its application.

Michigan, 213 F.3d at 679. In *Union Electric*, however, this Court reviewed § 110(a)(2)'s eight specified criteria against which the EPA would evaluate SIPs for approval. *See id*. At that time, § 110(a)(2) provided that the Administrator "shall approve" the proposed plan if it has been adopted after public notice and hearing and if it meets the eight specified criteria. *See id.* 427 U.S. at 250. Today, the same "shall approve" language is now found in § 110(k)(3). ("[T]he Administrator shall approve such submittal as a whole if it meets all of the applicable requirements of this chapter.") This Court held that the "mandatory 'shall' makes it quite clear that the Administrator is not to be concerned with factors other than than those specified, [cite omitted] . . . and *none of the eight factors appears to permit consideration of technological or economic infeasibility*. [Footnote omitted.]" *Union Electric*, 427 U.S. at 257 (emphasis added).

One of the eight criteria reviewed in *Union Electric* was § 110(a)(2)(E), which required that a SIP contain:

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6 This statement by the Court holds true for the CAA's interstate pollutant transport provision (then § 110(a)(2)(E), now § 110(a)(2)(D)). As discussed in footnote 4, *supra*, the *Union Electric* Court did permit the EPA to consider economic and technological infeasibility, under § 110(a)(2)(A), in the EPA's determination of whether a SIP included provisions to achieve NAAQS as "expeditiously as practicable." *Union Electric*, 427 U.S. at 265. The interstate pollutant transport provision, however, was then found in § 110(a)(2)(E) and contained no language explicitly or implicitly permitting even ancillary consideration of economic feasibility by the EPA.

7 *See* Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 110(a)(2), 84 Stat. 1676 (1970).

8 *See* Clean Air Act Amendments of 1977, Pub. .L. No. 95-95, § 108(a)(4), 91 Stat. 685, 693 (1977).

9 *See* Clean Air Act Amendments, Pub. L. No. 101-549, § 101(b), 104 Stat. 2399, 2404 (1990).

> . . . adequate provisions for intergovernmental cooperation, including measures necessary to insure that emissions of air pollutants from sources located in any air quality control region will *not interfere with the attainment* or maintenance of such primary or secondary standard in any portion of such region outside of such State or in any other air quality control region.

Id., 427 U.S. at 250, n. 1 (emphasis added). Upon reviewing the eight criteria, this Court found that:

> These requirements are of a "technology-forcing character," *Train v. NRDC, supra*, at 91, [cite omitted] and are expressly designed to force regulated sources to develop pollution control devices that might at the time appear to be economically or technologically infeasible.

Id., 427 U.S. at 257. In direct contravention of the statute's design, the EPA's new rule fails to force emission reduction measures that are not "highly cost effective." As discussed below, if the EPA was barred from reading cost considerations into the original § 110(a)(2)(E) when approving SIPs, it also must be barred from injecting cost considerations into today's § 110(a)(2)(D).

In adopting the 1977 Amendments, Congress affirmed *Union Electric's* resolution of what Congress considered to be a "fundamental dispute under the act":

> This . . .dispute relates to two questions. The first is whether or not the Administrator is authorized (or required) to disapprove a State plan, because it is "economically or technologically infeasible" or because "it does not reflect the most cost-effective system" for attaining and maintaining the national ambient air quality standards. That question has now been settled by the Supreme Court in *Union*

> *Electric Co. v. EPA*, 427 U.S. 246 (1976), and the committee takes no issue with the holding of that case.

H.R. Rep. No. 294, 95th Cong., 1st Sess., at 56 (1977), *reprinted in* 1977 U.S.C.C.A.N. 1077, 1134. Under its new rule defining "significant contribution" in terms of "highly cost effective" emission reduction measures, the EPA ignores congressional intent. The EPA's rule rests upon cost factors Congress did not intend the agency to consider.

Since Congress affirmed the *Union Electric* decision, no amendments to the interstate pollutant transport provision have occurred that undercut the premise of *Union Electric*. "Enacted more than a quarter of a century ago, § 110 has gone through many changes, but its basic structure has survived." *Commonwealth of Virginia v. EPA*, 108 F.3d 1397, 1406 (D.C. Cir. 1997). "The 1990 amendments were the most comprehensive since 1970, but the changes to § 110, at least as they concern EPA's approval of State Plans, were predominantly of syntax, not substance." *Id.*, 108 F.3d at 1409. A careful review of the CAA's subsequent amendments and legislative history is vital to understanding how *Union Electric* is dispositive of this appeal.

In the 1977 amendments, § 110(a)(2)(E) was amended to require, in relevant part, that a SIP contain:

> . . . adequate provisions (i) prohibiting any stationary source within the State from emitting any air pollutant in amounts which will (I) *prevent* attainment or maintenance by any other State of any such national primary or secondary ambient air quality standard . . . .

Clean Air Act Amendments of 1977, Pub. L. 95-95, § 108(a)(4), 91 Stat. 685, 693 (1977) (emphasis added). In essence, the prohibited impact level of pollutant emissions was changed from amounts that will "interfere with attainment" to amounts that will "prevent attainment." Clearly, no congressional intent to inject cost considerations can be inferred here. In the 1990 amendments, § 110(a)(2) was amended again and re-ordered to now include thirteen

criteria, including § 110(a)(2)(D), which requires, in relevant part, that a SIP:

> (D) contain adequate provisions-
>
> (i) prohibiting, consistent with the provisions of this title, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will-
>
> (I) *contribute significantly* to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard . . . .

Clean Air Act Amendments, Pub. L. No. 101-549, § 101(b), 104 Stat. 2399, 2404 (1990) (emphasis added). As mentioned above, in adopting the amendment, Congress explained its change from the term "prevent attainment" to "contribute significantly to nonattainment":

> For interstate pollution to violate current law, it must "prevent attainment." Since it may be impossible to say that any single source or group of sources is the one which actually prevents attainment, the bill changes "prevent attainment or maintenance" to "contribute significantly to nonattainment or interfere with maintenance by," thus clarifying when a violation occurs.

S. Rep. No. 228, 101st Cong., 1st Sess. 21 (1989), *as reported in* 1990 U.S.C.C.A.N. 3385, 3407. The term "contribute significantly" was intended by Congress to reach more sources and not to allow some sources to escape the provision's prohibition just because their required emission reductions are not "highly cost effective." The same Senate Report quoted above stated:

> In summary, the nonattainment provisions of the bill are designed to bring about emission reductions from *all* the major sources that contribute to ozone . . . pollution . . . .

Id., at 13, 1990 U.S.C.C.A.N. at 3399 (original emphasis). The EPA's rule allows some major contributing sources to escape reductions because their available reduction measures are not "highly cost effective."

The changes in the 1977 and 1990 amendments, from "interfere with the attainment" to "prevent attainment" to "contribute significantly to nonattainment," do not undermine the premise of *Union Electric*. They only refer to the level of pollution impact that will result in a violation of the CAA. Considerations of costs remain "wholly foreign" to the EPA's administration of § 110(a)(2)(D)(i)(I). *Union Electric* is still the controlling decision of this Court. Thus, the court of appeals' decision is in direct conflict with this Court's precedent and warrants reversal.

3. The court of appeals' decision directly conflicts with its own precedents in *ATA* and *Lead Industries*.

The NOx SIP Call rule is of nationwide effect, directly impacting the eastern half of the nation. The rule also implicates statutory interpretation issues regarding the CAA's interstate pollution transport provision that will have ramifications for the entire nation. Any EPA actions, under § 110, that are of nationwide scope or effect can only be reviewed by the D.C. Circuit. *See* § 107(b)(1). Accordingly, conflicts between the CAA decisions of the D.C. Circuit are on par with conflicts between the different circuits and, when the D.C. Circuit fails to reconcile serious conflicts between its decisions, this Court should do so. This Court should resolve the clear conflicts between *Michigan*, *Lead Industries* and *ATA*.

In *ATA*, the court of appeals held:

> Cost-benefit analysis, mentioned as a possibility in *Lockout/Tagout I*, 938 F.2d at 1319-21, is not available under decisions of this

> court. Our cases read 109(b)(1) as barring EPA from considering any factor other than "health effects relating to pollutants in the air." *NRDC*, 902 F.2d at 973; *see also Lead Industries*, 647 F.2d at 1148; *American Lung Ass'n v. EPA*, 134 F.3d 388, 389 (D.C.Cir.1998); *American Petroleum Inst.*, 665 F.2d at 1185 (echoing the same themes).

In seeking a writ of certiorari in *ATA*, the EPA specifically relied upon *Lead Industries* when EPA states that it "cannot consider the economic or technological feasibility of attaining NAAQS" under § 109. *See* Petition for a writ of certiorari, at 15. The *Lead Industries* court held that "the statute and its legislative history make clear that economic considerations play no part in the promulgation of ambient air quality standards under Section 109." *Lead Industries*, 647 F.2d at 1148. In reaching this conclusion, the *Lead Industries* court reviewed § 110 also, stating:

> [Section] 110, 42 U.S.C. § 7410, provides that once ambient air quality standards have been promulgated, each state must prepare and submit an implementation plan outlining the measures to be taken to ensure that the standards are met. It is these state implementation plans which actually impose pollution control requirements and, consequently, *if Congress had wanted the economics of pollution control considered it would have so provided in § 110.*

Id., 647 F.2d at 1149, n. 37 (emphasis added).

The holdings in *Lead Industries* are ostensibly based upon, and cite, this Court's precedents in *Train* and *Union Electric*, which held that the "technology-forcing" requirements of the Act "are expressly designed to force regulated sources to develop pollution control devices that might at the time appear to be economically or technologically infeasible." *See Union Electric*, 427 U.S. at 257; *Train*, 421 U.S. at 90-91; *Lead Industries*, 647 F.2d at 1149.

In addition to the conflict between the D.C. Circuit's decisions on CAA rules of nationwide effect, there are issues common to *ATA* and *Michigan* that warrant the granting of this petition for certiorari. EPA's statutory authority to consider economic feasibility is implicated in both cases. EPA argues in *ATA* that costs cannot be considered under § 109, but in *Michigan*, EPA did consider costs under § 110. Two of the state petitioners herein, Michigan and West Virginia, argue as respondents in *ATA* that costs can be considered under § 109, but argue herein that costs cannot be considered under § 110.[10] In *ATA*, the court agreed with the EPA that the agency was barred from the consideration of costs, even though § 109 impliedly, if not expressly, allows for such and even though those costs are logically relevant to the decision of where to "draw the line" for the ozone NAAQS.[11] In *Michigan*, on the other hand, the court approved the EPA's claim that the agency was free to consider costs, even though § 110(a)(2)(D) neither expressly nor impliedly allows for such and even though those costs are wholly *irrelevant* to determining the "amounts which . . . will contribute significantly" to the nonattainment of NAAQS by downwind states. This petition should be granted to fully resolve these inconsistent decisions. In *ATA* this Court is asked to consider if the prohibition of the EPA's consideration of costs, in the absence of express statutory authorization under the CAA, is absolute. If it is not absolute, guidance from this Court is needed as to whether an exception exists for those situations, like in *ATA*, where no other relevant factors except economic or technological feasibility are available for establishing a reasoned basis for delineating a standard, either for air quality or for SIPs. Petitioners believe that such an exception may be made if economic and technological feasibility are relevant to a decision and indispensable in providing a reasoned basis for the agency's action. In *Michigan*, these prerequisites are completely lacking and this Court should set the decision aside.

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[10] The states of Alabama, South Carolina and Virginia are not petitioners in *ATA* and therefore, have not taken any position regarding the applicability of costs under §109.

[11] *See* Brief of states of Ohio, Michigan and West Virginia in Support of Cross-Petitioners in *ATA*.

4. The EPA's calculation of state emission budgets based on costs, as approved by the court of appeals, conflicts with principles of state sovereignty found in the Clean Air Act's statutory framework of cooperative federalism, as found in *Train v. NRDC*, 421 U.S. 60, 79 (1976), by intruding upon each state's obligation and right to revise its plan "as necessary" to adequately mitigate interstate pollutant transport.

This Court should consider how EPA's rule affects Indiana, Pennsylvania and New York City. Indiana and Pennsylvania both contribute air pollutants which interfere with New York City's attainment of the national air quality standard for ozone. Indiana is estimated to contribute a maximum of 6 parts per billion ("ppb") of ozone to New York City. *See* 63 Fed. Reg. 57,393 (1998) (App. 92a). Pennsylvania is estimated to contribute a maximum of 25 ppb of ozone to New York City. *See* 63 Fed. Reg. 57,392 (1998) (App. 89a). EPA considers both contributions significant enough to bring both Indiana and Pennsylvania under the EPA's new rule to eliminate significant contributions. At first blush, EPA's construction seems to function.[12] In application, however, EPA's rule delivers a result that is at odds with the intent of Congress. Under the new rule challenged here, both states will be required to eliminate all emissions that can be

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12 Here Petitioners assume *arguendo* that the EPA properly established an amount threshold in determining whether a state contributes significantly to nonattainment by downwind states. This threshold appears to be a contribution of 2 ppb ozone and/or a four episode average percent contribution of less than one percent ozone due to manmade emissions. *See* EPA Brief at 43, n. 32; *see also* 63 Fed. Reg. 57,393-94 (App. 92a-98a) (Group 3 states all contribute "less than 2 ppb to 1-hour daily maximum exceedances in New York City" and are not included among the twelve states contributing significantly to the New York City nonattainment area). The EPA, however, failed to provide a reasoned basis for selecting these "screening criteria," which establish an unreasonably low threshold.

eliminated for $2,000/ton or less.[13] As a result, modeling shows that Pennsylvania's projected contribution to New York City's problems will be reduced only to 19 ppb, Joint Appendix in D.C. Cir. Case No. 98-1497 at 02036a,[14] but it will no longer be considered "significant" by the EPA because the remaining contributions cannot be eliminated in a "highly cost effective" manner. Indiana, on the other hand, may be required to eliminate emissions far in excess of what may be "necessary" to eliminate its smaller contribution to New York City. While a contribution of 6 ppb is considered significant enough to require Indiana to drastically reduce its emissions, a contribution of 19 ppb will no longer be considered significant enough to require Pennsylvania to further reduce its emissions. In this way, the least offending state is burdened with the most offending state's responsibility to reduce its significant contribution to a common neighbor's pollution woes.[15] Moreover, nowhere in the rule does the agency show that its plan will accomplish the congressional goal of prohibiting all *truly* significant contributions by the upwind states. And

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13 The EPA failed to provide a reasoned basis for its selection of $2,000/ton as the upper limit for defining "highly cost effective" emission reduction measures. The EPA merely states that "[b]y examining the cost effectiveness of recently promulgated or proposed NOx controls, EPA determined that an average of approximately $2,000 per ton removed is highly cost effective." 63 Fed. Reg. 57,377-78 (1998) (App. 76a-83a). Even if the EPA's cost considerations were permissible, because the agency's path in selecting $2,000/ton cannot be reasonably discerned, it is arbitrary and capricious. *See Motor Vehicle Manufacturers Ass'n v. State Farm Mutual Automobile Ins. Co.*, 463 U.S. 29, 43 (1983). The EPA also failed to establish what rate would be "cost effective" prior to declaring $2,000/ton "highly cost effective." As even the court of appeals recognized:

> [The EPA] neither rests that benchmark on anything in the language or function of § 110(a)(2)(D)(i)(I), nor otherwise explains why the resulting cut-off point represents the right degree of "cost-effectiveness" (i.e., why "highly cost-effective" should be at that "height"). Accordingly, we must read the EPA as having understood that its selection of the cut-off point was essentially unbounded.

Michigan, 213 F.3d at 680. Here, the court of appeals also errs by failing to find the EPA's reliance on the figure of $2,000/ton to be arbitrary and capricious.

14 This modeling was performed for the Southeast Michigan Council of Governments ("SEMCOG").

15 This anomaly is especially disturbing in light of the EPA's acknowledgement that ozone benefits from reducing upwind emissions *decrease with distance*. *See* 63 Fed. Reg. 57,381 (1998) (App. 86a).

nowhere in the CAA or its legislative history does Congress contemplate or authorize such a drastic shifting of burdens from one state to another. The EPA's rule exceeds its statutory authority, defeats the "technology-forcing" intent of Congress and deeply offends principles of state sovereignty and individual responsibility.

The court of appeals clearly failed to substantively review the EPA's application of the requirements and limitations of § 110(k)(5), which the EPA relied upon for its authority to issue the NOx SIP Call. Section 110(k)(5) provides that:

> Whenever the Administrator finds that the applicable implementation plan for any area is substantially inadequate . . . to mitigate *adequately* . . . interstate pollutant transport . . . or to otherwise comply with any requirement of this chapter, the Administrator shall require *the State* to revise the plan *as necessary to correct such inadequacies.*

Section 110(k)(5) (emphasis added). In *Union Electric*, when reviewing the 1970 version of § 110(a)(2)(B), this Court held that "the most natural reading of the '*as may be necessary*' phrase in context is simply that the Administrator must assure that the minimal, or '*necessary*,' requirements are met." *Union Electric*, 427 U.S. at 263. In the scenarios of Indiana and Pennsylvania, *supra*, the EPA's new rule may require Indiana to revise its plan more than is "necessary" to correct Indiana's inadequacies. By contrast, Pennsylvania will not be required to fully revise its plan "as necessary" to correct all of its inadequacies. Instead, the EPA has, in effect, determined that some revisions necessary to correct Pennsylvania's inadequacies are not "highly cost effective" and, therefore, those remaining inadequacies will not be considered "substantially inadequate."[16] The illogical result is that an original implementation plan which allows a state to

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16 Petitioners acknowledge that this argument is substantially similar to its previous arguments regarding § 110(a)(2)(D)(i)(I), but this argument logically follows from the EPA's determination of what constitutes a state's significant contribution. Moreover, § 110(k)(5)'s clear language confirms the EPA's flawed approach to significant contributions and illustrates this rule's impermissible impact on the statutory framework of "cooperative federalism."

contribute 6 ppb is "substantially inadequate," but a revised plan which allows a state to contribute 19 ppb is not considered by the EPA to be "substantially inadequate." By requiring some states to do more than Congress intended while allowing other states to do less, the EPA impermissibly undermines the statutory framework of "cooperative federalism" that is the centerpiece of the CAA. In *Train*, this Court held that:

> The Agency is plainly charged by the Act with the responsibility for setting the national ambient air standards. Just as plainly, however, it is relegated by the Act to a secondary role in the process of determining and enforcing the specific, source-by-source emission limitations which are *necessary* if the national standards it has set are to be met .... The Act gives the Agency no authority to question the wisdom of a State's choices of emission limitations if they are part of a plan which *satisfies* the standards of § 110(a)(2) .... Thus, so long as the ultimate effect of a State's choice of emission limitations is compliance with the national standards for ambient air, the State is at liberty to adopt whatever mix of emission limitations it deems best suited to its particular situation.

Train, 421 U.S. at 79 (emphasis added). EPA has no authority to simultaneously require a state to do more than is "necessary" to eliminate its significant contribution to the nonattainment of downwind states. Nor may the EPA allow some states to do less than is "necessary" to "satisfy" the prohibition in § 110(a)(2)(D).

5. The court of appeals erred in allowing the EPA's "overall notions of economic fairness" to change the substantive obligations of the states as fixed by Congress.

EPA states that its rule is based on EPA's notion of economic fairness. The "secondary aspects of EPA's analysis" included:

> * The overall fairness of the control regimes required of the downwind and upwind areas, including the extent of the controls required or implemented by the downwind and upwind areas.
> * General cost considerations, including the relative cost-effectiveness of additional downwind controls compared to upwind controls.

63 Fed. Reg. 57,376 (1998) (App. 73a). Together with EPA's primary consideration of "the availability of highly cost effective control measures for upwind emissions," *id.*, the EPA charters a new and unauthorized course for the CAA by establishing a "fairness" policy that Congress neither contemplated nor authorized. The agency states in its rule that:

> EPA believes that *overall notions of fairness* suggest that upwind sources which contribute significant amounts to the nonattainment problem should implement cost-effective reductions. When upwind emitters exacerbate their downwind neighbors' ozone nonattainment problems, and thereby visit upon their downwind neighbors additional health risks and potential clean-up costs, EPA considers it fair to require the upwind neighbors to reduce at least the portion of their emissions for which highly cost-effective controls are available.

63 Fed. Reg. 57,379 (1998) (emphasis added) (App. 83a). Remarkably, by merely restating, in a judgmental tone, the interstate pollution problem Congress already recognized, the EPA then attempts to usurp the role of the legislature by devising its own corrective action instead of pursuing the remedy Congress expressly prescribed. The EPA also presumes Congress did not consider "overall notions of fairness" when it enacted the CAA. This is not the case. The *Union Electric* Court found that:

> Technology forcing is a concept somewhat new to our national experience and it necessarily entails certain risks. But Congress considered those risks in passing the 1970 Amendments and decided the dangers posed by uncontrolled air pollution made them worth taking. Petitioner's theory [of allowing claims of economic and technological infeasibility] would render that considered legislative judgment a nullity, and that is a result we refuse to reach.

Union Electric, 427 U.S. at 269. Here, too, in *Michigan*, the court of appeals decision threatens to render Congress' legislative judgment a nullity by allowing cost considerations to undermine the statutory prohibition on significant pollutant contributions. The EPA's "fairness" policy exceeds its statutory authority and the court of appeals decision is tantamount to a grant of unbridled discretion to the EPA to do as it sees fit. This Court should not allow such a precedent to stand.

The court of appeals also failed to adequately consider the greater public health benefits of the full statutory prohibition of *truly* significant contributions as compared to the more limited benefits of the EPA's rule. By using cost considerations to limit required emission reductions, the EPA falls short of minimizing the adverse effects of ground level ozone as Congress intended. As the EPA found:

> At ground level, ozone can cause a variety of ill effects to human health, crops and trees. Specifically, ground-level ozone has been shown in clinical and/or epidemiological studies to have the following health effects:
>
> * Decreased lung function, primarily in children active outdoors.
> * Increased respiratory symptoms, particularly in highly sensitive individuals.
> * Hospital admissions and emergency room visits for

> respiratory causes among children and adults with pre-existing respiratory disease such as asthma.
> * Inflammation of the lung.
> * Possible long-term damage to the lungs or even premature death.

63 Fed. Reg. 57,359 (1998) (67a-68a). It was these serious health effects from pollutants like ozone that led Congress to resort to the "technology-forcing" design of § 110(a)(2)(D). Congress was aware of the extent of this problem, and acted to address it. An EPA rule affecting nearly half the nation cannot be allowed to fall short of the goal established by Congress, especially in the portion of the country where ozone problems are most severe. Accordingly, this Court should grant this petition and quickly return the EPA to the path Congress has chosen, as difficult or unwise as the EPA may believe that path to be. In the long run, the nation's air quality and the public health should realize greater protection and improvement.

CONCLUSION

For the reasons stated above, the petition for a writ of certiorari should be granted.

Respectfully submitted,

STATE OF ALABAMA,
ex rel. BILL PRYOR
Attorney General

Tommy E. Bryan
Assistant Attorney General
The State of Alabama and
Associate General Counsel
Alabama Department of
Environmental Management
P. O. Box 301463
Montgomery, Alabama
36130-1463
(334) 271-7855

Thomas H. Zerbe
Senior Counsel
Office of Legal Services
Division of Environmental
Services
1356 Hansford Street
Charleston, West Virginia
25301
(304) 558-9160
Counsel for West Virginia

JENNIFER M. GRANHOLM
Attorney General

Thomas L. Casey
Solicitor General
Counsel of Record
P. O. Box 30212
Lansing, Michigan 48909
(517) 373-1124

Alan F. Hoffman
Assistant Attorney General
Attorneys for State of Michigan

Commonwealth of Virginia

By Counsel
Mark L. Earley
Attorney General

Roger L. Chaffe
Senior Assistant
Attorney General

Stewart T. Leeth*
Assistant Attorney General
900 East Main Street
Richmond, Virginia 23219
(804) 786-6957
*Counsel of Record

CHARLES M. CONDON
Attorney General of South Carolina
KENNETH P. WOODINGTON
Senior Assistant Attorney General
CHRISTIE NEWMAN BARRETT
Assistant Attorney General
South Carolina Office of the Attorney General
P. O. Box 11549
Columbia, South Carolina 29211
(803) 734-3736

Samuel L. Finklea, III
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201
(803) 898-3349

October, 2000

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APPENDIX A

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT
Argued November 9, 1999 Decided March 3, 2000

No. 98-1497

State of Michigan,
Michigan Department of Environmental Quality and
State of West Virginia, Division of
Environmental Protection,
Petitioners

v.

U.S. Environmental Protection Agency,
Respondent

New England Council, Inc., et al., *Intervenors*

Consolidated with
98-1499, 98-1500, 98-1501, 98-1502, 98-1504, 98-1518,
98-1556, 98-1567, 98-1573, 98-1585, 98-1588, 98-1590,
98-1596, 98-1598, 98-1601, 98-1602, 98-1608, 98-1609,
98-1611, 98-1615, 98-1616, 98-1617, 98-1618, 98-1619,
98-1621, 99-1070, 99-1093

On Petitions for Review of an Order of the Environmental Protection Agency

James E. Doyle, Attorney General, State of Wisconsin, and Philip Peterson and Thomas L. Dosch, Assistant Attorneys General, were on the brief for intervenor State of Wisconsin.

Louis E. Tosi and William L. Patberg were on the brief for amicus curiae Toledo Metropolitan Area Council of Governments.

Susan E. Ashbrook, Assistant Attorney General, State of Ohio, James C. Gulick, Special Deputy Attorney, State of North Carolina, Andrea B. Field, Theodore L. Garrett, Todd Palmer, Jonathan S. Martel, William F. Pedersen and Scott H. Segal argued the causes for petitioners. With them on the briefs were Betty D. Montgomery, Attorney General, State of Ohio, Andrew S. Bergman, Assistant Attorney General, Michael F. Easley, Attorney General, State of North Carolina, J. Allen Jernigan, Special Deputy Attorney General, James P. Longest, Jr., and Amy R. Gillespie, Assistant Attorneys General, Bill Pryor, Attorney General, State of Alabama, Tommy E. Bryan, Assistant Attorney General, Jeffrey Modisett, Attorney General, State of Indiana, Daniel B. Dovenbarger, Chief Counsel, Jennifer M. Granholm, Attorney General, State of Michigan, Thomas Casey, Solicitor General, Alan F. Hoffman, Assistant Attorney General, Charles M. Condon, Attorney General, State of South Carolina, Mark E. Earley, Attorney General, State of Virginia, Roger L. Chaffe, Senior Assistant Attorney General, Stewart T. Leeth, Assistant Attorney General, Thomas H. Zerbe, Senior Counsel, State of West Virginia, Samuel L. Finklea, III, Grant Crandall, Eugene M. Trisko, Norman W. Fichthorn, Mel S. Schulze, David M. Flannery, Kathy Beckett, Harold P. Quinn, Jr., Michael D. Hockley, J. Lister Hubbard, R. Brooke Lawson, III, Robert E. Lannan, II, Terry J. Satterlee, Alok Ahuja, Mark E. Shere, Bryan G. Tabler, Jeffrey L. Landsman, Jennifer S. McGinnity, Howard E. Shapiro, Margaret Claiborne Campbell, Thomas E. Knauer, David R. Straus, Deborah E. Jennings, Julie R. Domike, Patricia T. Barmeyer, Lisa G. Dowden, Brian J. Renaud, Rhonda L. Ross, Jeffrey F. Cherry, Katherine L. Rhyne, John M. Koeppl, Henry J. Handzel, Jeffrey A. Knight, Joan Dreskin, Kevin B. Belford, Pamela A. Lacey, Gene E. Godley, Michael H. Levin and Edmund B. Frost. Earle D. Getchell, Jr., Neal J. Cabral, Christopher D. Man, Jacqueline H. Fine, Jon S. Faletto and John P. Proctor entered appearances.

Charles S. Carter and Deborah Ann Hottel were on the brief of amici curiae South Carolina Chamber of Commerce, Environmental Management Association of South Carolina, South Carolina Manufacturers Alliance, and South Carolina Farm Bureau Federation.

Jon M. Lipshultz and Patricia R. McCubbin, Attorneys, U.S. Department of Justice, argued the causes for respondent.

With them on the brief were Lois J. Schiffer, Assistant Attorney General, and Jan Tierney, Howard Hoffman, Amey W. Marrella and Dwight C. Alpern, Attorneys, U.S. Environmental Protection Agency.

J. Jared Snyder, Assistant Attorney General, State of New York, argued the cause for state intervenors. With him on the brief were Elliot Spitzer, Attorney General, Peter H. Schiff, Deputy Attorney General, Thomas F. Reilly, Attorney General, State of Massachusetts, William L. Pardee, Assistant Attorney General, M. Dukes Pepper, Jr., Assistant Counsel, State of Pennsylvania, Sheldon Whitehouse, Attorney General, State of Rhode Island, Michael Rubin, Environmental Advocate, William H. Sorrell, Attorney General, State of Vermont, Ronald A. Shems, Assistant Attorney General, Jennifer L. Wurzbacher, Assistant Attorney General, State of Maryland, Richard Blumenthal, Attorney General, State of Connecticut, Richard F. Webb, Assistant Attorney General, Andrew Ketterer, Attorney General, State of Maine, Paul Stern, Deputy Attorney General, Philip McLaughlin, Attorney General, State of New Hampshire, and Maureen D. Smith, Assistant Attorney General.

Kathleen L. Millian argued the cause for intervenor Her Majesty the Queen in Right of Ontario (Province of Ontario, Canada). With her on the brief was Bruce J. Terris.

David Hawkins and Raissa Griffin were on the brief for intervenor Natural Resources Defense Council, et al. Andrew P. Caputo entered an appearance.

Patrick M. Raher, John G. Roberts, Jr., Catherine E. Stetson, Michael R. Barr, Michael A. Conley, Theresa Fenelon Falk, John H. Sharp, Paul G. Wallach and Kenneth R. Meade were on the brief for industry intervenors.

Richard A. Wegman was on the brief for intervenor the Government of Canada.

Before: Williams, Sentelle and Rogers, Circuit Judges.

Opinion Per Curiam.*

Dissenting opinion filed by Circuit Judge Sentelle.

Introduction

Under the Clean Air Act the Environmental Protection Agency promulgates national ambient air quality standards ("NAAQS") for air pollutants, and states must then adopt state implementation plans ('SIPs') providing for the implementation, maintenance, and enforcement of the NAAQS; such plans are then submitted to EPA for approval. *See* Clean Air Act ("CAA") § 110(a)(1), 42 U.S.C. § 7410(a)(1) (1994). Even after a SIP is approved, EPA may at a later time call for SIP revisions if the Administrator finds a SIP inadequate to attain or maintain the NAAQS, to meet the dictates of pollutant transport commissions, or "to otherwise comply with any requirement of this chapter." CAA § 110(k)(5), 42 U.S.C. § 7410(k)(5).

In October 1998 EPA issued a final rule mandating that 22 states and the District of Columbia revise their SIPs to mitigate the interstate transport of ozone.[1] See Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone ("Final Rule"), 63 Fed. Reg. 57,356 (1998). The statutory hook for EPA's action was a 1990 amendment to the Clean Air Act which requires that SIPs contain "adequate provisions" prohibiting

> any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will . . . contribute significantly to nonattainment in, or interfere

* Judge Williams wrote Parts I.B-C and II.B; Judge Sentelle wrote Parts I.A, II.A, II.C, and III.A; Judge Rogers wrote Parts III.B and IV.

[1] The states are Alabama, Connecticut, Delaware, Georgia, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Missouri, North Carolina, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, West Virginia, and Wisconsin.

> with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard.

CAA § 110(a)(2)(D)(i)(I), 42 U.S.C. § 7410(a)(2)(D)(i)(I) (1994). EPA uniformly required that each state reduce nitrogen oxides (NOx--an ozone precursor) by the amount accomplishable by what EPA dubbed "highly cost-effective controls," namely, those controls EPA found capable of removing NOX at a cost of $2000 or less per ton. Numerous petitions for review challenge various aspects of EPA's decision.

In Part I we reject the following claims: that EPA could not call for the SIP revisions without convening a transport commission; that EPA failed to undertake a sufficiently state-specific determination of ozone contribution; that EPA unlawfully overrode past precedent regarding "significant" contribution; that EPA's consideration of the cost of NOx reduction violated the statute; that EPA's scheme of uniform controls is arbitrary and capricious; that CAA § 110(a)(2)(D)(i)(I) as construed by EPA violates the nondelegation doctrine.

In Part II we hold that the record does not support including Wisconsin in the SIP call, nor does it support creating NOx budgets based on the entire emissions of Missouri or Georgia. We reject the claim that South Carolina was improperly included in the SIP call.

In Part Ill we reject the claim that EPA impermissibly intruded on the statutory rights of states to fashion their SIPs. We also reject the claim that EPA violated the Regulatory Flexibility Act.

In Part IV we reject the claim that EPA arbitrarily revised the definition of a "NOx budget unit." We reject all of the claims raised by the Council of Industrial Boilers save one: we hold that EPA failed to provide adequate notice of a change in the definition of an electric generating unit. We also hold that EPA did not provide adequate notice of a change in the control level assumed for large, stationary internal combustion engines, but we reject the claim that EPA failed to follow its own standards in defining such engines. Finally, we

uphold EPA's limits on early reduction credits, and EPA's use of a 15% multiplier for calculating emissions from low mass emission units.

We note at the outset that one challenge has been stayed. In 1979, EPA set the acceptable level for ozone in the ambient air at 0.12 parts per million ("ppm"), averaged over intervals of one hour. This standard is commonly known as the "1-hour standard." By 1997, EPA had concluded that the 1-hour standard no longer adequately protected public health. See National Ambient Air Quality Standards for Ozone, 62 Fed. Reg. 38,856 (1997). Pursuant to the agency's statutory mandate to review and revise NAAQS as appropriate, 42 U.S.C. § 7409(d)(1), EPA promulgated a new, more stringent "8-hour standard" which limits ozone levels to 0.08 ppm, averaged over an 8-hour period. See 62 Fed. Reg. 38,856 (codified at 40 C.F.R. § 50.10).

EPA has undertaken the phasing out of the 1-hour standard on an area-by-area basis, mandating that the standard would no longer apply to an area once it is "determine[d] that the area has air quality meeting the 1-hour standard." 40 C.F.R. § 50.9(b). The call for SIP revisions in question here requires the covered upwind states to submit SIP revisions pursuant to the 8-hour standard even though EPA was not designating any 8-hour nonattainment areas prior to July 1999. See 63 Fed. Reg. at 57,370; Transportation Equity Act for the 21st Century, Pub. L. No. 105-178, § 6103, 112 Stat. 107, 465 (1998) (providing that states submit suggested designations no later than July 1999 and EPA finalize those designations no later than July 2000). EPA maintains that it has the authority to include the 8-hour standard in the current § 110(a)(2)(D)-specific SIP call pursuant to its authority under § 110(a)(1). Section 110(a)(1) provides that

> [e]ach State shall ... adopt and submit to [EPA], within 3 years (or such shorter period as [EPA] may prescribe) after the promulgation of a national primary ambient air quality standard (or any revision thereof) . . ., a plan which provides for implementation, maintenance, and

> enforcement of such primary standard in each air quality control region (or portion thereof) within such State.

42 U.S.C. § 7410(a)(1).

State and Industry/Labor petitioners initially attacked the challenged SIP call on the basis that EPA exceeded its statutory authority and acted arbitrarily in basing the SIP call on the 8-hour standard when the agency had not yet designated any areas as being in nonattainment under the new standard. After petitioners' final briefs were submitted, we held in *American Trucking Ass'n, Inc. v. EPA*, 175 F.3d 1027, reh'g granted in part, den'd in part 195 F.3d 4 (D.C. Cir. 1999), that the new NAAQS based on the 8-hour standard was derived from a construction of the Clean Air Act that rendered the relevant provision an unconstitutional delegation of legislative power and remanded the case to the agency. See id. at 1033-40. Seizing on this holding, petitioners added in their reply briefs that if this court does not accept the contention in their original briefs as to why EPA impermissibly relied on the 8-hour standard, then we should hold that American Trucking means that EPA cannot rely on the 8-hour standard because it was promulgated in violation of the non-delegation doctrine.

Regardless, EPA moved to stay consideration of the issues involving the 8-hour standard because the agency has stayed the 8-hour findings contained in the challenged SIP call. granted the motion. Because EPA's stay removes the 8-hour findings as a basis for the SIP call, we will resolve only the issues involving the 1-hour standard.

I. General Claims

A. Transport Commission

States have the primary responsibility to attain and maintain NAAQS within their borders. *See* CAA § 107(a), 42 U.S.C. § 7407(a). When EPA concludes that an "implementation plan for any area is substantially inadequate to attain or maintain the relevant [NAAQS], to mitigate adequately the interstate pollutant transport described in section [176A] or

[184], or to otherwise comply with any requirement of this chapter," the CAA requires EPA to order a state to revise and correct its SIP "as necessary" ("SIP call"). CAA § 110(k)(5), 42 U.S.C. § 7410(k)(5). One such "requirement of this chapter," is the "good neighbor provision" of section 110(a)(2)(D). As amended, section 110(a)(2)(D) requires that a SIP "contain adequate provisions"

> (i) prohibiting, consistent with the provisions of this subchapter, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will . . . contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard . . . [and]
>
> (ii) insuring compliance with the applicable requirements of sections [126] and [115] . . . (relating to interstate and international pollution abatement).

42 U.S.C. § 7410(a)(2)(D) (emphasis added). Section 126(b) enables an individual state or a political subdivision of a state to petition EPA to make a "finding that any major source or group of stationary sources emits or would emit any air pollutant in violation of the prohibition of [§ 110(a)(2)(D)(ii)]." 42 U.S.C. § 7426(b). EPA may make or deny such a finding. See id. Section 115 pertains to petitions made by foreign countries. See 42 U.S.C. § 7415. Title I, the subchapter referenced in section 110(a)(2)(D), also includes sections 176A and 184, the provisions referenced in section 110(k)(5). In 1990, Congress added a provision to section 176A stating that EPA "may" establish an interstate air pollution transport region whenever EPA "has reason to believe that the interstate transport of air pollutants from one or more States contributes significantly to a violation of a national ambient air quality standard in one or more other States." 42 U.S.C. § 7506a(a). The section also provides that whenever EPA "establishes a transport region [EPA] shall establish a transport commission." 42 U.S.C. § 7506a(b)(1). Among other things, a section 176A commission is to assess

the interstate transport situation in the relevant transport region, assess interstate pollution mitigation strategies, and recommend to EPA measures necessary "to ensure that the plans for the relevant States meet the requirements of [section 110(a)(2)(D)]." 42 U.S.C. § 7506a(b)(2). In addition, section 176A permits a transport commission to request that EPA "issue a finding under [section 110(k)(5)] . . . that the implementation plan for one or more of the States in the transport region is substantially inadequate to meet [section 110(a)(2)(D) requirements]." 42 U.S.C. § 7506a(c). After public comment, EPA has the authority to approve, approve in part, or disapprove such a request. See id.

In part, section 184, an ozone-specific provision, establishes an ozone transport region in the northeast ("NOTR") and sets the deadline for convening the transport commission required as a result of NOTR's establishment. See 42 U.S.C. § 7511c(a). The section also requires that "[i]n accordance with [section 110] . . . each State included [or subsequently included] within a transport region established for ozone shall submit a State implementation plan or revision" regarding vehicle inspection programs and volatile organic compounds control technology. 42 U.S.C. § 7511c(b). In addition, section 184 contains provisions giving states within an established transport region the opportunity to use their section 176A-established transport commission to help develop additional ozone control measures. *See* 42 U.S.C. § 7511c(c).

Efforts to control states' upwind contributions to ozone pollution continued to fall short during the early 1990s. In 1995, upon the recommendation of the Environmental Council of the States, thirty-seven states and representatives from EPA, industry, and environmental groups formed a national work-group called the Ozone Transport Assessment Group ("OTAG") to study and devise solutions to the interstate ozone transport problem. *See* 62 Fed. Reg. 60,318, at 60,319; EPA, Ozone Transport Assessment Group Executive Report, EPA Document No. A p 95-56, Doc. No. 1I-G-05 ("Executive Report") at ii. More specifically, OTAG's purpose was to "identify and recommend a strategy to reduce transported ozone and its precursors, which, in combination with other measures will enable attainment and maintenance

of the Ozone standard in the OTAG region." Executive Report at ii. OTAG concluded that upwind states needed to reduce NOx emissions in order to address the transport problem. However, the OTAG members could not agree on specific control measure recommendations. *See* 62 Fed. Reg. at 60,320. In response to OTAG's efforts, EPA engaged in further analysis and devised the SIP call challenged here.

Industry/Labor petitioners argue that the CAA required EPA to convene a transport commission pursuant to sections 176A/184 prior to issuing the challenged sip call. EPA concedes that OTAG was not a statutorily-mandated 176A/184 transport commission as defined in the CAA. If a transport commission is required, EPA would be bound by statute to follow certain procedures in establishing and executing its commission obligation. However, we hold that the CAA does not require EPA to establish such a commission.

Industry/Labor petitioners contend that the reference to the transport commission provisions in section 110(k)(5) and the mandate of section 110(a)(2)(D) that SIP requirements be consistent with Title I provisions obligated EPA, prior to issuing the SIP call, to create a transport commission guided by the terms in sections 176A and 184 of the statute. Industry/Labor petitioners also note that sections 176A and 184 reference both sections 110(a)(2)(D) and 110(k)(5) See 42 U.S.C. §§ 7S06a(b)(2)(c), 7511c(c)(5). From this hodgepodge of largely unrelated cross-references Industry/Labor petitioners argue that EPA can only issue a section 110(k)(5) SIP call to enforce section 110(a)(2)(D)'s requirement after forming a 176A/184 transport commission we disagree.

As a threshold matter, subsections 176A(a) and (b)(1) make clear that EPA must establish a transport commission if the agency exercises its discretion to create a transport region pursuant to section 176A(a). *See* 42 U.S.C. §§ 7506a(a), (b)(1). However, EPA can address interstate transport apart from convening a 176A/184 transport commission as subsection (a) provides that EPA "may" establish a transport region and subsection (b)(1) only requires a transport commission upon the establishment of a transport region because "[w]henever the Administrator establishes a transport

region under subsection (a) . . ., the Administrator shall establish a transport commission." Moreover, the relevant section 184 requirements apply to states within established transport regions. *See* 42 U.S.C. § 7511c(a)-(c). Thus, Industry/Labor petitioners cannot reason around the determinative statutory language contained in section 176A. Statutory construction is not an exercise in picking apart a complex statute and piecing the parts back together in a manner to effect a particular end. Ideally, a statute's directive concerning a certain issue will be plain and clear. Just so here.

B. State-Specific Analysis

Section 110(a)(2)(D)(I)(i) requires that the relevant offending emissions be "emissions activity within the State." Several petitioners charge that EPA did not sufficiently analyze each particular state in determining which states contributed unduly to ozone downwind.

In issuing its Notice of Proposed Rulemaking ("NPRM"), EPA relied on data collected from OTAG. The data were multi-state and regional in nature and were framed as a model of how ozone was transported downwind from 12 different regions that covered the eastern half of the United States. See Final Rule, 63 Fed. Reg. at 57,382. The OTAG regions do not track state boundaries, so several states are split between regions. EPA also relied upon the NOx emissions of the individual states. *See id.* at 57,383-84. A potential shortcoming of the NPRM's approach was that it was too multi-state in nature. EPA knew how much NOx each state was emitting, but a state's emissions as a share of total emissions do not necessarily correspond proportionately to its share in the creation of ozone in downwind states. OTAG's multi-state modeling of such downwind transportation painted with a rather broad brush.

We need not pass judgment on whether the evidence and approach of the NPRM would have supported the final rule. After receiving comments regarding the insufficiently state- specific analysis of the NPRM, EPA performed state-specific modeling. *Id.* at 57,384. According to EPA, this confirmed the results of the regional modeling. *Id.*

The two types of state-specific modeling go by the names UAM-V and CAMx. In the UAM-V approach, the researchers model an affected downwind area to establish a base case, and then "zero-out" a particular source state. Thus with UAM-V it can be estimated what ozone concentrations would be like if a particular state contributed no ozone or ozone precursors. The CAMx modeling, on the other hand, is a source apportionment analysis which tracks modeled ozone from its precursors (NOx and volatile organic compounds (VOCs)) through the formation of ozone and subsequent migration. Whereas UAM-V tells modelers how much ozone is missing when one state is zeroed out, CAMx models an ozone concentration and provides apportionment, i.e., who sent what. An advantage of the CAMx model used by EPA was that, unlike the UAM-V modeling, with CAMx EPA could isolate man-made emissions, or ozone creation based on reactions between man-made and biogenic emissions. UAM-V modeling was less discriminating.

Petitioners really do nothing more than quibble with the state-specific modeling. For example, Industry/Labor petitioners argue that zero-out modeling is inappropriate because it models an impossible scenario--the elimination of all man-made NOx emissions; but they do not suggest how much this characteristic is likely to distort the results. State petitioners charge that sometimes the results of the two models were inconsistent, with, for example, the CAMx showing a larger migration of ozone from a state than the UAM-V showed for all man-made NOx in that state. EPA itself noted this infrequent inconsistency. *See id.* at 57,385. Neither criticism affords ground for non-expert judges to find a material likelihood of serious error. *See Appalachian Power Co. v. PA*, 135 F.3d 791, 802 (D.C. Cir. 1998).

Petitioners complain that EPA did not provide the data sooner. EPA made the new modeling available on the Internet six weeks prior to the final rule, published its availability in the Federal Register a month before the final rule, and during that time received and responded to questions and comments regarding the modeling. Other than what we have already mentioned, petitioners have evidently not been able to identify further flaws in the modeling used, and thus have failed to show any prejudice from EPA's timetable.

Personal Watercraft Indus. Ass'n v. Department of Commerce, 48 F.3d 540, 544 (D.C. Cir. 1995).

C. Determining "Significant" Contribution

Section 110(a)(2)(D)(i)(I) applies only to states that "contribute significantly" to nonattainment in a downwind state. Petitioners make essentially four arguments challenging EPA's determination of "significance": (1) EPA acted contrary to precedent; (2) EPA considered forbidden factors, namely, costs of reduction; (3) EPA irrationally imposed uniform NOx controls on the states; (4) EPA's determination was so devoid of intelligible principles as to violate the nondelegation doctrine.

1. Past Precedent

Before the 1990 amendments to the Clean Air Act, § 110(a)(2)(E)(I) directed the EPA to insist on SIP provisions adequate to prevent sources within a state from emitting air pollution that would "prevent attainment or maintenance [of primary or secondary standards] by any other State." 42 U.S.C. § 7410(a)(2)(E) (1982) (emphasis added). In a number of decisions EPA found, with approval of the courts, that various emissions of a particular state, having a proportionate impact on some downwind state greater than the impacts involved here, did not meet that standard. *See New York v. EPA*, 852 F.2d 574 (D.C. Cir. 1988); *Air Pollution Control Dist. of Jefferson County v. EPA*, 739 F.2d 1071 (6th Cir. 1984); *New York v. EPA*, 716 F.2d 440 (7th Cir. 1983); *New York v. EPA*, 710 F.2d 1200 (6th Cir. 1983); *Connecticut v. EPA*, 696 F.2d 147 (2d Cir. 1982). According to the states, these decisions, and what they claim to be Congress's implicit endorsement in the 1990 amendments, bar EPA from regarding the ozone emissions here as "significant" within the meaning of § 110(a)(2)(D)(i)(I) Thus the states would equate the old standard--"prevent attainment"--with the new standard: "contribute significantly to nonattainment"

Nothing in the text of the new section or any other provision of the statute spells out a criterion for classifying "emissions activity" as "significant." Nor did EPA, under the then-existing provision, bind itself to any criterion. Further,

given EPA's finding as to the cumulative effects of the pollutants that generate ozone, EPA might well be able to distinguish this case from the sulfur dioxide cases that the states have cited. *See* 63 Fed. Reg. at 57,359 ("The chemical reactions that create ozone take place while the pollutants are being blown through the air by the wind, which means that ozone can be more severe many miles away from the source of emissions than it is at the source."). But the states point to nothing suggesting any prior adoption by EPA of any binding concept of how much was too much, so the claim falls short at the threshold.

2. Consideration of costs

Petitioners claim § 110(a)(2)(D)(i)(I) does not permit EPA to take into consideration the cost of reducing ozone. The full section provides that SIPs must contain provisions adequately prohibiting any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will . . . contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard.

42 U.S.C. § 7410(a)(2)(D)(i)(I) (emphasis added).

Before reviewing the petitioners' attacks we must first describe how EPA went about the business at hand. It first determined that 23 jurisdictions are "significant" contributors to downwind nonattainment. 63 Fed. Reg. 57,398. In making this listing EPA drew lines based on the magnitude, frequency, and relative amount of each state's ozone contribution to a nonattainment area. For example, in one calculation it looked at the number of NOx parts per billion ("ppb") that a candidate state's emissions made to exceedances in specific downwind locations (examined as a proportion of those exceedances). Indiana was found to contribute at least 2 ppb to 4% of the 1-hour ozone exceedances in New York City, and was deemed a "significant contributor" to nonattainment there. On the other hand, Alabama, Georgia, Massachusetts, Missouri, South Carolina, Tennessee, and Wisconsin were not deemed "significant contributors" to New York City nonattainment because none of these states ever contributed more

than 2 ppb to a 1-hour exceedance in that area. Although EPA looked at other measures, e.g., the percentage contribution of a state's emissions to total concentrations in a specified area, no one quarrels either with its use of multiple measures, or with the way it drew the line at this stage.

Although the dividing line was a very low threshold of contribution, in the end EPA's rule called for termination of only a subset of each state's contribution. EPA decided that the 23 "significant contributors" need only reduce their ozone by the amount achievable with "highly cost-effective controls." 63 Fed. Reg. at 57,403. Thus, once a state had been nominally marked a "significant contributor," it could satisfy the statute, i.e., reduce its contribution to a point where it would not be "significant" within the meaning of § 110(a)(2)(D)(i)(I), by cuffing back the amount that could be eliminated with "highly cost-effective controls." EPA's design was to have a lot of states make what it considered modest NOx reductions, uniformly limited to ones that could be achieved (in EPA's estimate) for less than $2000 a ton. As a result, naturally, the ultimate line of "significance," whether measured in volume of NOx emitted or arriving in nonattainment areas, would vary from state to state depending on variations in cutback costs.

State and Industry/Labor petitioners argue that this approach runs afoul of § 110(a)(2)(D), which they read as prohibiting any consideration of costs or cost-effectiveness in determining what contributions are "significant." So far as appears, none of the states proposes that EPA, if reversed, must require complete extirpation of their NOx emissions. Rather, the gamble--at least of the small contributors--is evidently that if EPA were barred from considering costs, it would never have included such states. Because the attacks from the states and Industry/Labor are somewhat dissimilar and have shifted back-and-forth between the opening briefs, reply briefs, and oral argument, a summary of the relevant differences and vacillations is in order. We note that no party makes any claim that EPA was either confined to adopting rules whose benefits exceeded their costs, or permitted to use

that criterion in selecting its final rule.[2] Nor has it been argued that the term "significant" required consideration of costs.

State petitioners initially argued that it was "arbitrary and unlawful" for EPA to make cost effectiveness a "controlling factor" or "linchpin" in the determination of significant contribution under § 110(a)(2)(D). Thus EPA's error, as the states would have it, was in considering costs too much: "Petitioning States do not claim that there is no role for cost considerations; Petitioning States simply stress that EPA must establish a definition of significance that is dominated by air quality factors, as air quality is the sole factor mentioned in the statute." Reply Br. of Petitioning States at 4. In support of this position, State petitioners cited our en banc decision in *Natural Resources Defense Council v. EPA*, 824 F.2d 1146, 1163 (D.C. Cir. 1987) (en banc), where we held that a statutory mandate for EPA to set a standard with an "ample margin of safety to protect the public health" did not preclude the consideration of costs and technological feasibility, but that these concerns could not be the "primary consideration."

At oral argument, counsel for the states abandoned this position and decided that the statute flatly prohibits EPA from considering costs at all. Transcript of Oral Argument at 14-17. Indeed, counsel eventually went so far as to claim that if faced with two states, one of which could eliminate all relevant emissions at a trivial cost, while the other could eliminate none at a cost of less than $5000 a ton, EPA must mandate the same cutback for each. *Id.* at 16-17.

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[2] Indeed, accepting EPA's belief that ozone cannot be held responsible for mortality effects, see Proposed Rule, 62 Fed. Reg. at 60,321 (not listing death as a health effect of groundlevel ozone); compare Final Rule, 63 Fed. Reg. at 57,359 (listing "[p]ossible long-term damage to the lungs or even premature death" as health effects), and mainly using EPA data, some outside observers have calculated the benefit per ton of NOx reduction as ranging from a high of $750 per ton (for mobile sources in certain areas) to a low of negative $6 per ton (for other mobile sources). Alan Krupnick & Virginia McConnell, "Cost-Effective NOx control in the Eastern U.S." (Draft July 1999) (Table 4); see Krupnick & Anderson, A Dilemma Downwind, 137 Resources for the Future 5, 7 (1999) ("If one assumes that ozone does not cause deaths, the EPA's proposal is much too restrictive, incurring costs far out of proportion with the benefits it would bring.").

We should note here that the consequence of this position is not so extreme as it sounds. EPA's rule allows ton-for-ton emissions trading between firms based on allowances determined by each state. *See* 63 Fed. Reg. 57,456. Obviously the firms with the highest emission reduction costs will, if permitted by their states, buy up pollution allowances from firms that are granted allowances because they have over-controlled for NOx--firms, obviously, with low reduction costs. If transaction costs were zero, the only effect of the initial assignment of cutbacks would be distributional: firms would make only the cheaper cutbacks, but firms with high emission-reduction costs would buy allowances from those with low costs and thereby transfer wealth to them. See Ronald H. Coase, The Problem of Social Cost, 3 J. L. & Econ. 1 (1960). But transaction costs notoriously are not zero;[3] so the likely effect of the proposed statutory interpretation would be that any aggregate cutback would be achieved at considerably higher cost than under EPA's reading of § 110(a)(2)(D)(i)(I), with absolutely no offsetting environmental benefit to the public. Of course we are able to assume the existence of EPA's allowance trading program only because no one has challenged its adoption. As the program seems to have no rationale other than cost reduction, *see* 63 Fed. Reg. at 57,457, it would presumably be invalid under petitioners proposed reading of § 110(a)(2)(D)(i)(I), in which case the states' position really is as extreme as it sounds.

Returning to the positions of the parties, we find Industry/Labor engaging in a migration comparable to that of the states, though in the opposite direction. In its opening and reply brief Industry/Labor argued that "§ 110(a)(2)(D) requires consideration of only air quality impacts in determining the significance of any contribution." However, at oral argument Industry/Labor offered a construction of the statute that seemed to restore to EPA via § 110(k)(5) what it would take away via § 110(a)(2)(D). Industry/Labor claimed that costs could be considered when EPA determines if a SIP is "adequate" under § 110(k)(5). Transcript of Oral Argument at 28. The states actually offered this same reading of § 110(k)(5) in their reply brief (back when they thought EPA could consider costs) but appeared to abandon it at oral

[3] A glance at EPA's regulations for allowance trading will convince any doubter that transaction costs can safely be expected to be substantial. *See* 63 Fed. Reg. at 57,457-75.

argument in favor of a flat prohibition on EPA cost considerations. The argument that costs may be considered under § 110(k)(5) seems to concede that the structure of the statutory scheme manifests no intention to bar the consideration of costs.

And so we are indeed presented with the question whether § 110(a)(2)(D) bars consideration of costs, but it is presented to us with the caveat that costs can be considered later on in the process, and accompanied by a false start by the states, who initially said that EPA could consider costs, just not too much. Against this backdrop, it would be at the very least ironic for us to say there is "clear congressional intent to preclude consideration of cost" under § 110(a)(2)(D). *See Natural Resources Defense Council v. EPA*, 824 F.2d 1146, 1163 (D.C. Cir. 1987) (en banc).

For convenience we repeat the statutory language. Section 110(a)(2)(D)(i)(I) provides that SIPs must contain provisions adequately prohibiting

> any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will . . . contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard.

42 U.S.C. § 7410(a)(2)(D)(i)(I) (emphasis added). By its terms the statute is focused on "amounts" of "emissions activity" that "contribute significantly to nonattainment." The fundamental dispute is over the clarity of the phrase "contribute significantly." Must EPA simply pick some flat "amount" of contribution, based exclusively on health concerns, such that any excess would put a state in the forbidden zone of "significance"?[4] Or was it permissible for EPA to consider differences in cutback costs, so that, after reduction

[4] We deal below with a related question: Did EPA act irrationally in setting the level of significance without regard for varying levels of downwind impact? See part I.C.3 below.

of all that could be cost-effectively eliminated, any remaining "contribution" would not be considered "significant"? In deciding on the permissible ceiling, EPA used "significant" in the second way.

The term "significant" does not in itself convey a thought that significance should be measured in only one dimension-- here, in the petitioners' view, health alone. Indeed, "significant" is a very odd choice to express unidimensionality; consider the phrase "significant other." In some contexts, "significant" begs a consideration of costs. In finding a threshold requirement of "significant risk" in § 3(8) of the Occupational Health and Safety Act, 29 U.S.C. § 652(8), a plurality of the Supreme Court understood a "significant" risk as something more than a "mathematical straitjacket," and held that "[s]ome risks are plainly acceptable and others are plainly unacceptable." *Industrial Union Dept., AFL-CIO v. American Petroleum Institute ("Benzene")*, 448 U.S. 607, 655 (1980) (plurality opinion). The plurality withheld judgment on whether the Act required a "reasonable correlation between costs and benefits," id. at 615, but the upshot of inserting the adjective "significant" was a consideration of which risks are worth the cost of elimination. OSHA has since interpreted § 3(8) and regulation of "significant risk" to require "cost-effective protective measures" and set standards with an eye toward "the costs of safety standards [being] reasonably related to their benefits." *See International Union v. OSHA (Lockout/Tagout II)*, 37 F.3d 665, 668- 69 (D.C. Cir. 1994) (quoting OSHA's final rule). OSHA's reaction to the term "significant" seems to confirm what some commentators have asked rhetorically: "[C]an an agency sensibly decide whether a risk is 'significant' without also examining the cost of eliminating it?" Stephen G. Breyer, Richard B. Stewart, Cass R. Sunstein & Matthew L. Spitzer, Administrative Law and Regulatory Policy 65 (4th ed. 1999).

Petitioners conspicuously fail to describe the intellectual process by which EPA would determine "significance" if it may consider only health. EPA has determined that ozone has some adverse health effects-- however slight--at every level. *See National Ambient Air Quality Standards for Ozone*, 62 Fed. Reg. 38,856 (1997). Without consideration of cost it is hard to see why any ozone-creating

emissions should not be regarded as fatally "significant" under § 110(a)(2)(D)(i)(I). Perhaps EPA might (under such a rule) let the upwind states off at the stringency level of the programs imposed on non-attainment areas, but petitioners do not explain how "significance" can exclude cost but admit equity.

Although the ambiguity of the word "significant" and the implications of a health-only reading are potentially fatal flaws in petitioners' theory (aside from their own inability to discern the "plain language" consistently), the most formidable obstacle is the settled law of this circuit. It is only where there is "clear congressional intent to preclude consideration of cost" that we find agencies barred from considering costs. *NRDC*, 824 F.2d at 1163; *see also George E. Warren Corp. v. EPA*, 159 F.3d 616, 622-24 (D.C. Cir. 1998), *reh'g granted*, 164 F.3d 676 (D.C. Cir. 1999); *Grand Canyon Air Tour Coalition v. FAA*, 154 F.3d 455, 475 (D.C. Cir. 1998), *cert. denied*, 119 5. Ct. 2046 (1999); *NRDC v. EPA*, 937 F.2d 641, 643-46 (D.C. Cir. 1991); *cf. International Bhd. of Teamsters v. United States*, 735 F.2d 1525, 1528-29 (D.C. Cir. 1984) (construing mandate to adopt "reasonable requirements" for safety as allowing consideration of cost).

In NRDC we considered § 112 of the Clean Air Act, requiring EPA to set an air quality standard for hazardous pollutants with an "ample margin of safety" to protect the public health. We held that this phrase did not preclude a consideration of costs. 824 F.2d at 1155, 1163. In George E. Warren Corp. we acknowledged that the statutory scheme for the reformulated gasoline program had the "overall goal" of improving air quality and "reducing air pollution." 159 F.3d at 622. But because there was nothing "in the text or structure of the statute to indicate that the Congress intended to preclude the EPA from considering the effects a proposed rule might have upon the price and supply of gasoline," *id.* at 623, we found no such preclusion even though the provision at issue contained no allusion whatever to such effects. Similarly, in Grand Canyon Air Tour the statute required the FAA to devise a plan for "substantial restoration of the natural quiet" in the Grand Canyon area, but we found nothing impermissible in the FAA's consideration of costs to the air tourism industry in deciding how "substantial" that restoration must be. 154

F.3d at 475. In *NRDC v. EPA* we considered whether EPA permissibly used cost-benefit analysis in refusing to classify a particular polluting source as "major." The petitioners argued that cost considerations were precluded, and we stated: "[While the statutory language and legislative history do not bar petitioners' construction, they provide little support and no necessity for it." 937 F.2d at 645. We affirmed EPA's use of cost-benefit analysis.

These cases are unexceptional in their general view that preclusion of cost consideration requires a rather express congressional direction. *See* Edward W. Warren & Gary E. Marchant, "More Good Than Harm": A First Principle for Environmental Agencies and Reviewing Courts, 20 Ecology L.Q. 379, 421 (1993) ("The need to compare benefits and costs has long played a role in judicial review of agency actions regulating health and safety risks."); Cass R. Sunstein, Interpreting Statutes in the Regulatory State, 103 Harv. L. Rev. 405, 487 (1989) (suggesting an "interpretive principle" drawn from case law, including *NRDC v. EPA*, 824 F.2d 1146, that reviewing courts will read statutes as authorizing regulations with benefits at least "roughly commensurate with their costs, unless there is a clear legislative statement to the contrary"). Three of the cases, moreover--the two NRDC cases and Grand Canyon--, involve statutory language with just the same structure as here. A mandate directed to some environmental benefit is phrased in general quantitative terms ("ample margin of safety," "substantial restoration," and "major"), and contains not a word alluding to non-health trade-offs; in each case we found that in making its judgments of degree the agency was free to consider the costs of demanding higher levels of environmental benefit. So too here.

Petitioners point to no evidence of the requisite "clear congressional intent to preclude consideration of cost." *NRDC*, 824 F.2d at 1163. The text, we have already seen, works no such preclusion. As for the statutory structure, petitioners willingly concede that costs may be considered under 110(k)(5) in determining the adequacy of a state plan. Why would a Congress intent on precluding cost considerations allow such an escape hatch? The petitioners cite no legislative history suggesting that cost considerations should be barred.

In sum, there is nothing in the text, structure, or history of § 110(a)(2)(D) that bars EPA from considering cost in its application.

3. Uniform Controls

As we have seen, EPA required that all of the covered jurisdictions, regardless of amount of contribution, reduce their NOx by an amount achievable with "highly cost-effective controls." Petitioners claim that EPA's uniform control strategy is irrational in two distinct ways. First, they observe that where two states differ considerably in the amount of their respective NOx contributions to downwind nonattainment, under the EPA rule even the small contributors must make reductions equivalent to those achievable by highly cost-effective measures. This of course flows ineluctably from the EPA's decision to draw the "significant contribution" line on a basis of cost differentials. Our upholding of that decision logically entails upholding this consequence.

The second objection is that because of distance and the vagaries of pollutant migration and ozone formation, a molecule of NOx emitted in Indiana (for example) may cause far less adverse health impact than a molecule emitted in eastern Pennsylvania. EPA acknowledges that "[s]ources that are closer to the nonattainment area tend to have much larger effects on air quality than sources that are far away." 63 Fed. Reg. at 25,919. While EPA's cost-effectiveness standard and emissions trading seem to mean that EPA will secure the resulting aggregate NOx reduction at roughly the lowest possible cost, they do not necessarily mean that it will have secured the resulting aggregate health benefits at the lowest cost. Petitioners ask, in effect, why EPA did not, by one means or another (e.g., in the emissions trading system), make reductions from sources near the nonattainment areas (or otherwise more damaging, molecule for molecule) more valuable than ones from distant sources?

EPA considered this approach, modeling the efficacy of regional alternatives compared to its uniform strategy. *See* Final Rule, 63 Fed. Reg. at 57,423. Its researchers found that non-uniform regional approaches by comparison did not "provide either a significant improvement in air quality or a

substantial reduction in cost." *Id.* The complaining states offer no material critique of EPA's methodology in reaching this answer, which in fact some independent investigators have confirmed. *See* Krupnick & Anderson, A Dilemma Downwind, 137 Resources for the Future 5, 6 (1999) ("[Even with] spatial differences, when viewed across the entire study region, RFF concluded that there was no clear benefit to an exposure-based trading system, compared with simple ton- for-ton NOx trading. Public health benefits would be approximately the same, and there would be no significant difference in costs to the utilities."). We have no basis to upset EPA's judgment.

4. Nondelegation

In their opening brief and more prominently in their reply brief, state petitioners argue that EPA has not determined "significant contribution" based on any intelligible principles. Petitioners rely heavily on our decision in *American Trucking Ass'n, Inc. v. EPA*, 175 F.3d 1027, reh'g granted in part, den'd in part 195 F.3d 4 (D.C. Cir. 1999), essentially arguing that nothing about EPA's analysis explains how much of a NOx contribution was too much (i.e., worthy of a SIP call).

We must recognize here that EPA's cost-effectiveness criterion is a radically incomplete line-drawing device. EPA has effectively ruled that each affected state must get down to the NOx emissions levels that would prevail if it removed all NOx emissions costing $2000/ton or less to remove. This satisfies its "cost-effectiveness" criterion because (if states also seek to minimize costs subject to the EPA's constraint) only these relatively low-cost tons will be removed. But while EPA indicates that it rested the $2000/ton figure on "NOx emissions controls that are available and of comparable cost to other recently undertaken or planned NOx measures," Final Rule, 63 Fed. Reg. at 57,400, it neither rests that benchmark on anything in the language or function of § 110(a)(2)(D)(i)(I), nor otherwise explains why the resulting cut-off point represents the right degree of "cost-effectiveness" (i.e., why "highly cost-effective" should be at that "height"). Accordingly, we must read EPA as having understood that its selection of the cut-off point was essentially unbounded.

But petitioners have ignored a limit to the nondelegation doctrine that we relied on in American Trucking and even more emphatically in its immediate precursor, *International Union, UAW v. OSHA ("Lockout/Tagout I")*, 938 F.2d 1310 (D.C. Cir. 1991). There we noted that the scope of the agency's "claimed power to roam" was "immense, encompassing all American enterprise." *Id.* at 1317 Quoting verbatim from *Synar v. United States*, 626 F. Supp. 1374, 1383 (D.D.C. 1986) (three-judge panel), *aff'd sub nom. Bowsher v. Synar*, 478 U.S. 714 (1986), we said, "When the scope increases to immense proportions, as in [*A.L.A. Schecter Poultry Corp. v United States*, 295 U.S. 495 (1935)], the standards must be correspondingly more precise." *Lockout/Tagout I*, 938 F.2d at 1317. We noted that a mass of cases in courts had upheld delegations of effectively standardless discretion, and distinguished them precisely on the ground of the narrower scope within which the agencies could deploy that discretion. *Id. American Trucking*, perhaps too succinctly for petitioners to notice, incorporated the Lockout/Tagout I discussion of the point. *American Trucking*, 175 F.3d at 1037.

Nominally, of course, § 110(a)(2)(D)(i)(I) encompasses "all American enterprise." But as a practical matter EPA must make a number of threshold determinations that in practice appear to have confined the statute to a modest role. Before assessing "significance," EPA must find (1) emissions activity within a state; (2) show with modeling or other evidence that such emissions are migrating into other states; and (3) show that the emissions are contributing to nonattainment. We do not mean to minimize the scope of EPA's action in the present case. Nearly half of the nation is affected and control costs will be substantial. And it may ultimately prove that the dam constituted by these criteria will burst, subjecting "all American industry" to EPA's § 110(a)(2)(D)(i)(I) discretion. But in practice, so far, these threshold criteria appear to have so limited EPA's activity under the section as to make the rule in question here the sole example of 110(a)(2)(D)(i)(I) rulemaking. Accordingly, the grounds on which we remanded in *Lockout-Tagout I* and *American Trucking* for confining agency constructions are absent here.

II. Inclusion of Specific States

A. Wisconsin

Wisconsin industry petitioners separately challenge Wisconsin's inclusion in the SIP call. The Wisconsin petitioners argue that the emissions from the state do not contribute significantly to nonattainment in any other state. Section 110(a)(2)(D)(i)(I) requires that a state "contribute significantly to nonattainment in . . . any other State" in order to be included in the challenged SIP call. 42 U.S.C. § 7410(a)(2)(D)(i)(I) (emphasis added). As explained below, EPA erroneously included Wisconsin in the SIP call because EPA failed to explain how Wisconsin contributes to nonattainment in any other state.

EPA contends that Wisconsin contributes significantly to other states' nonattainment because the state significantly contributes ozone over the Lake Michigan region. Despite EPA's Lake Michigan concerns, the agency does not show on the record that Wisconsin's ozone contribution affects any onshore state nonattainment. At oral argument, counsel for EPA conceded that "[t]he part that's missing [from the record] is a thorough explanation to support our modeling data and things of that nature between the Lake Michigan receptor area and the onshore states." Oral Arg. Tr. at 107. When asked for more, counsel could only respond that "the best evidence . . . is simply the narrative statements in the [final rule's] preambles . . . . There's nothing else there." Id. Because EPA conceded at oral argument that it has no record evidence directly linking Wisconsin's ozone contribution over Lake Michigan to nonattainment in any state and because EPA must "demonstrate[] a reasonable connection between the facts on the record and its decision" made pursuant to its statutory authority, *Ethyl Corp. v. EPA*, 51 F.3d 1053, 1064 (D.C. Cir. 1995), we hold that EPA acted unlawfully by including Wisconsin in a SIP call limited by statute to states contributing significantly to nonattainment in any other state and therefore set aside Wisconsin's inclusion in the SIP call. *See* 5 U.S.C. § 706(2)(A), (C)(1994) ("The reviewing court shall . . . hold unlawful and set aside agency action . . . found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not accordance with law [or] in excess of statutory

jurisdiction, authority, or limitations, or short of statutory right.").

B. Missouri and Georgia

Missouri and Georgia were on the geographical perimeter of EPA's SIP call. No state west of Missouri was included, nor were the two states directly to its north (Iowa and Minnesota) and south (Arkansas). Georgia was a bit more in the thick of things, surrounded on three sides by included states--Alabama, Tennessee, North Carolina, and South Carolina; but the southern portion of Georgia borders the excluded state of Florida. Industrial petitioners within Missouri and Georgia challenge EPA's decision to calculate NOx budgets for these two states based on the entirety of NOx emissions in each state. Petitioners argue that there is record support only for the proposition that emissions from, roughly speaking, the eastern half of Missouri and the northern two-thirds of Georgia "contribute" to downwind concentrations; accordingly, they say, the NOx budgets for Missouri and Georgia should be based solely on those emissions.

We must here explain how EPA calculated NOx budgets. It projected the total amount of NOx emissions that sources in a state would emit in the year 2007, in light of expected growth and other controls required by the CAA. EPA then projected total NOx emissions if "highly cost-effective controls" were implemented. The resulting calculation became the state's NOx budget, with the difference between the base case and the controlled case being the "significant" contribution discussed above. Obviously a state's NOx budget will vary depending on whether EPA considers all of the NOx emissions in the state, or instead considers only emissions located in a smaller portion of the state (assuming emissions are dispersed throughout the state, which is the case here and without which the issue would be immaterial, as nonexistent emissions need not be controlled). For Missouri and Georgia, as for all other included states, NOx budgets were calculated using all NOx emissions in the state.

The challenge basically stems from the character of OTAG's modeling, and its resulting recommendations to EPA. OTAG's ozone transport model used grids drawn across most

of the eastern half of the United States. The first grid was the most precise, with grid cells of 12 kilometers squared (244 square kilometers)--the "fine grid." A second grid extended beyond the perimeter of the fine grid and had cells of 36 kilometers squared resolution--the "coarse grid." For a variety of reasons to be discussed shortly, the fine grid did not track state boundaries, and Missouri and Georgia were among several states that were split between the fine and coarse grids. OTAG then ran modeling for both grids, but in the final analysis did not find emissions from the coarse grid worthy of special concern. OTAG's executive summary stated: "[The focus on ozone air quality impacts in the fine grid raised questions about the need for controls in the coarse grid. The recommendations adopted by the Policy Group recognize that the OTAG analyses demonstrated that transport impacts of the coarse grid areas on the fine grid are minimal and therefore, do not include the coarse grid areas for recommended control measures other than those that would be applied nationally." Petitioners argue that EPA should base NOx budgets for Missouri and Georgia only on portions of these states within the fine grid.

EPA offers three reasons for including the entire states of Missouri and Georgia:

> (1) The division of individual States by OTAG was based, in part, on computational limitations in OTAG's modeling analyses; (2) the additional upwind emissions from full, as opposed to partial, States would provide additional benefit to downwind nonattainment areas; and, (3) Statewide emissions budgets create fewer administrative difficulties than a partial-State budget.

Final Rule, 63 Fed. Reg. at 57,424. We review deferentially, searching for the reasonableness of EPA's action, *Appalachian Power*, 135 F.3d at 802, whether that be EPA's interpretation of the statute, *see Chevron*, 467 U.S. at 842-43, or EPA's explanation for its policy choice, *see Motor Vehicle Mfrs. Ass'n v. State Farm Mutual Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).

The two inquiries can and do overlap. *See Animal Legal Defense Fund v. Glickman*, No. 97-5009, slip op. at 9 (D.C. Cir. Feb. 1, 2000).

On its face the statute neither mandates nor prohibits an all-or-nothing statewide perspective. It directs EPA to make sure that SIPs (which of course are state plans) adequately prohibit "any source or other type of emissions activity within the State from emitting" in excess of the substantive limit. The critical issue is whether the targeted "source" or "emissions activity" "contribute[s] significantly to nonattainment" in another state.

EPA's first argument is that the fine grid split Missouri and Georgia in part because of computer limitations--every extension of the fine grid modeling was costly in terms of both computer memory and data collection. Document No. II-A-14, Draft OTAG Final Report Regional and Urban Scale Modeling--Chapter 2, 2-7 (undated). But the OTAG modelers allocated their scarce resources purposefully, by reference to known air quality data, explicitly taking into consideration the "locale of various problem areas (as represented by urban-area modeling domains), and emissions density." Id. Thus it was no mere techno-fortuity that the fine grid included enough of Missouri to include the city of St. Louis and enough of Georgia to include Atlanta: both cities are designated nonattainment areas for ozone under the 1-hour NAAQS. *See* Final Rule, 63 Fed. Reg. at 57,359. Moreover, the fine grid portions of both states are the closest to other nonattainment areas, such as Chicago and Birmingham, and generally higher ozone density.

Of course the fine grid modeling of parts of Missouri and Georgia showed emissions in the aggregate meeting the EPA's threshold "contribution" criteria. Thus fine grid modeling of each in its entirety would presumably also have done so. But that is a simple arithmetic necessity (a state is necessarily composed of its parts) and provides no reason for EPA to ignore the very air quality factors that influenced the design of the modeling that did occur. OTAG itself clearly did not think those factors magically lost their force, for it recommended against controlling the rump areas. And EPA itself acknowledged part of the reason this should be so when it observed, "Sources that are closer to the nonattainment area

tend to have much larger effects on air quality than sources that are far away." 63 Fed. Reg. at 25,919. Indeed, even if the line between areas for which there was evidence and ones for which there was none were explained solely by fortuity, EPA would still be required to act upon the evidence that was generated. *See Chemical Manufacturers Ass'n v. EPA*, 859 F.2d 977, 989 (D.C. Cir. 1988) (holding that EPA must consider "all the evidence–including the industry evidence").

This leads us to EPA defenses other than modeling design. The first is that "the larger the geographic area that is controlled, the greater the downwind benefits." Final Rule, 63 Fed. Reg. at 57,424. This reason can only stand if the emissions at issue contribute significantly to nonattainment in another state. OTAG concluded they did not. *Id.* EPA claims that its state-specific modeling, which supplemented OTAG's more regional modeling, supports including the coarse grid areas. *See id.* Yet EPA's explanation and technique make clear that emissions from the fine grid areas may have been the sole source of the finding. Indeed, EPA says as much: "[I]f emissions from part of a State contribute significantly to downwind nonattainment or maintenance problems, emissions from the entire State contribute significantly to downwind nonattainment or maintenance problems." *Id.* This of course is also true as a matter of logic (a state is the sum of its parts). But it is completely consistent with the rump portion being innocent of downwind effect, and thus is scarcely a reason for ruling that significant contributions from a border city should rope in the entire state.

Aware of this problem, EPA simply throws the burden of persuasion onto the states. "[T]here is no peculiar meteorological phenomenon that would indicate that emissions from some portion of [each of the affected states] would not impact downwind nonattainment or maintenance problems." *Id.* In addition, "the atmosphere is constantly in motion and has no limitations at geo-political boundaries." *Id.* If this is "evidence" of contribution, it proves too much. If the simple proposition that the prevailing westerlies carry pollutants eastward were enough, EPA could, on the basis of a plant in Pennsylvania, use § 110(a)(2)(D)(i)(I) to control all NOx emissions east of the Rocky Mountains. While we uphold EPA's determination that a "significant" contribution is a cost-

effectively controllable contribution, EPA must first establish that there is a measurable contribution. Interstate contributions cannot be assumed out of thin air.

In the end administrative convenience is EPA's only real defense for basing NOx budgets on the entirety of a state's emissions. There seem to be two species of this argument. First, EPA seems to claim that it is just easier to calculate a NOx budget based on all the emissions in the state instead of only a portion of such emissions. EPA provides no explanation of why this is so, and it seems dubious. Within a state are counties, air quality control regions, and for some unfortunate states, nonattainment areas. EPA also has emissions data on specific sources, some of which may be susceptible of "highly cost-effective controls," and others of which may not be. *See, e.g.*, Emissions Data For Power Plants, <www.epa.gov/acidrain/ emissions> (visited January 26, 2000). Without data from such state subdivisions and specific sources, EPA could never have performed modeling or even set a statewide budget. EPA has not explained how calculation of a budget for sources in only half of the state would be any more onerous than for all sources in the state. Unless it is relying on data that exist only for the state as a whole, calculation seems on its face easier for a half than for a whole.

EPA offers a second administrative problem. If the concern for not allowing § 110(a)(2)(D)(i)(I) to encompass unproven areas compels an insistence on proof of contribution from ever smaller geographic subdivisions, any area's specific contribution may appear insubstantial, even though collectively there are significant contributions. In other words, unlike bologna, which remains bologna no matter how thin you slice it, significant contribution may disappear if emissions activity is sliced too thinly.

While this argument was stressed on appeal, it is nowhere to be found in the proposed or final rule, except insofar as it may have lurked behind the vague invocation of "administrative difficulties." *See* Final Rule, 63 Fed. Reg. at 57,424; Proposed Rule, 62 Fed. Reg. at 60,342. As a result it is quite undeveloped. But it appears to be based on a distortion of the claims of Missouri and Georgia. They are not asserting a right to bologna tactics, to slice down the unit of measurement

to a point of insignificance. All they are claiming is that where the data--calculated under EPA's supervision--inculpate part of a state and not another, EPA should honor the resulting findings.

Such a proposition would of course leave EPA free to select states as the unit of measurement. In turn, states (or the areas of states that believed themselves innocent of material contributions, or sources located therein), might respond by offering finer-grained computations. Such a process seems more like a healthy search for truth than the collapse into infinite regress that EPA claims to fear.

EPA also points to state flexibility: "Since each State has the flexibility to determine which sources to control in order to meet the budget, a State can structure its control strategy to require fewer reductions in certain portions of the State and greater controls in other areas." Final Rule, 63 Fed. Reg. at 57,424. This theory presents at least two difficulties. First, it overlooks the fact that state budgets not only encompass the whole state but are calculated on the basis of hypothesized cutbacks from areas that have not been shown to have made significant contributions. Thus the "flexibility" comes at the cost of a burden that is heavier in the aggregate, where the added weight accomplishes no purpose relevant to § 110(a)(2)(D)(i)(I). Second, a state's use of flexibility to pursue a purely in-state set of tradeoffs between cost and benefit (and thus unrelated to the goals of § 110(a)(2)(D)(i)(I)) may actually diminish the cutbacks in areas that are making a contribution to other states' nonattainment

Thus nowhere has EPA reasonably explained why NOx budgets based on every state source are the best stopping point with respect to states on the perimeter of the ozone problem.

Therefore we vacate EPA's final rule with respect to Missouri and Georgia and remand to the agency for reconsideration in light of this opinion.

C. South Carolina

Petitioner Santee Cooper challenges South Carolina's

inclusion in the SIP call by alleging that the state's downwind ozone nonattainment impact is "minuscule" and therefore not significant. We will hold unlawful EPA's decision to include South Carolina in the SIP call if we find EPA's decision "arbitrary, capricious, an abuse of discretion, or otherwise not accordance with law." 5 U.S.C. § 706(2)(A). In order for EPA's decision to include South Carolina in the SIP call to survive review, the agency must "demonstrate[ ] a reasonable connection between the facts on the record and its decision,"

Ethyl Corp., 51 F.3d at 1064. We conclude that the record supports EPA's decision to include the state as a significant contributor to downwind nonattainment. *See* Proposed Rule, 62 Fed. Reg. at 60,337-339. EPA considered the analyses submitted by the objecting petitioner but disagreed with the petitioner's conclusions as drawn from the relevant information. Specifically, EPA conducted additional modeling and interpreted the data in context and found that South Carolina significantly contributed to ozone nonattainment. *See id.*; Final Rule, 63 Fed. Reg. at 57,394-396.

For example, under the 1-hour standard, the UAM-V zero- out modeling results indicated that South Carolina had a high maximum contribution (16 ppb) and a high frequency of contribution (at least 2 ppb to 15% of the exceedances and at least 10 ppb to 5% of the exceedances) to Atlanta. *See* Office of Air and Radiation, U.S. Environmental Protection Agency, Doc. No. VI-B-11, Air Quality Modeling Technical Support Document for the NOx SIP Call C-5, H-2 (1998). The CAMx modeling results were comparable (25 ppb maximum contribution and a frequency of at least 2 ppb to 30% of the exceedances). See id. at C-5, G-6. Among the upwind states, only Alabama had a higher maximum contribution. See id. at Apps. G & H. Moreover, South Carolina's contribution to 1-hour nonattainment in Atlanta was no more "insignificant" than many of the other linkages that were found to be significant (e.g., Indiana's contribution to New York City). *See id.* at C-13, H-16.

In contrast, the petitioner seeks to show that the data, when viewed in isolation, makes South Carolina's contribution appear insignificant. In the end, we reject the challenge made on behalf of South Carolina because the petitioner attacks, not

so much the accuracy of EPA's data, but rather EPA's reasonable analysis and application of the data.

III. Federalism and Regulatory Flexibility Act

A. NOx Budgets

Building on OTAG's work, EPA ordered the challenged SIP call under the authority of section 110(k)(5) in order to address significant contribution to 1-hour ozone nonattainment as described under section 110(a)(2)(D).[3] In fashioning the SIP call, EPA focused on OTAG's determination that "[r]egional NOx emissions reductions are effective in producing ozone benefits." Proposed Rule, 62 Fed. Reg. 60,318, at 60,320. EPA also took into consideration OTAG's conclusion that while NOx controls are effective in addressing regional ozone problems, VOC controls are most effective locally and are most advantageous to urban nonattainment areas. See id. Because OTAG concluded that NOx reductions provide the key to addressing regional ozone problems, EPA's SIP call addresses regional ozone nonattainment through NOx emissions "budgets" established by the agency for each covered state. The budgets represent the amount of allowable NOx emissions remaining after a covered state prohibits the NOx amount contributing significantly to downwind nonattainment. *See* Final Rule, 63 Fed. Reg. 57,356, at 57,368. While EPA calculated the budgets using highly cost-effective emission controls, the agency allows the states to choose the control measures necessary to bring their emissions within the budget requirements. *See id.* at 57,377; *id.* at 57,400. Under EPA's budget plan, a state "may choose from a broader menu of cost-effective, reasonable alternatives" including alternatives that "may even be more advantageous in light of local concerns." *Id.* at 57,369-370. In fact, EPA has stated that the states have "full discretion in selecting the controls, so that [the states] may choose any set of controls that would assure achievement of the budget." *Id.* at 57,378. In addition, each state has the option of adopting an interstate trading program that allows it to purchase NOx "allowances" from sources that have elected to over-control. *Id.* at 57,430. The SIP call

[3] As noted above, we will not address the 8-hour portion of the SIP call.

also gives the states the option in some circumstances to use "banked" allowances (i.e. allowances from prior years) to comply with emissions limits. *See id.*

Petitioners assert that EPA's NOx budget program impermissibly intrudes on the statutory right of the states to fashion their SIP submissions in the first instance. In support of this position, the petitioners primarily rely on our decision in *Virginia v. EPA*, 108 F.3d 1397 (D.C. Cir.), modified on other grounds, 116 F.3d 499 (D.C. Cir. 1997), where we held that EPA may not use a section 110(k)(5) SIP call to order states to adopt a particular approach to achieving the SIP requirements listed in section 110. Under the rule at issue in Virginia, EPA required states to adopt California's vehicle emission program and in effect set the numerical emissions limitations and mandated the means for the states to achieve the necessary emissions reductions. That case involved an EPA rule that required several states to reduce ozone precursors by a particular program and only allowed states to implement a more stringent program as an alternative or substitute. We held that EPA's approach exceeded its authority under section 110 because each state retains the authority to determine in the first instance the necessary and appropriate control measures needed to satisfy section 110's standards. *See id.* at 1407-09 (citing *Train v. NRDC*, 421 U.S. 60, 78-79 (1975)).

Our holding in Virginia was mandated by the Supreme Court's decision in *Train v. NRDC*, 421 U.S. 60 (1975). *Train* involved a challenge to Georgia's procedures for revising source-specific emission limits adopted in a SIP. *See id.* at 68-71. The *Train* Court held that states have the authority under the CAA to initially propose specific emission limitations. See id. at 79. The Court defined "emission limitations" as "regulations of the composition of substances emitted into the ambient air from such sources as power plants, service stations, and the like. They are the specific rules to which operators of pollution sources are subject, and which if enforced should result in ambient air which meets the national standards." *Id.* at 78 (emphasis added). The Court further held that EPA has only "a secondary role in the process of determining and enforcing the specific, source-by-source emission limitations." *Id.* at 79 (emphasis added). The *Train*

decision and subsequent precedent make clear that section 110 left to the states "the power to [initially] determine which sources would be burdened by regulation and to what extent." *Union Elec. Co. v. EPA*, 427 U.S. 246, 269 (1976) (emphasis added); *cf. Virginia*, 108 F.3d at 1399, 1401, 1408 (involving a source-specific program); *Riverside Cement Co. v. Thomas*, 843 F.2d 1246, 1247-48 (9th Cir. 1988) (citing *Train* and noting EPA's secondary role in enforcing source-by-source emissions limitations). As we elaborated in *Virginia*, "the Supreme Court decided . . . that [section 110] did not confer upon EPA the authority to condition approval of [a state's] implementation plan . . . on the state's adoption of a specific control measure." *Virginia*, 108 F.3d at 1408. For the reasons set forth below, we conclude that the NOx budgets do not fall within the realm of impermissible SIP call regulation as defined in *Virginia* and *Train*.

Given the *Train* and *Virginia* precedent, the validity of the NOx budget program underlying the SIP call depends in part on whether the program in effect constitutes an EPA-imposed control measure or emission limitation triggering the *Train-Virginia* federalism bar: in other words, on whether the program constitutes an impermissible source-specific means rather than a permissible end goal. However, the program's validity also depends on whether EPA's budgets allow the covered states real choice with regard to the control measure options available to them to meet the budget requirements.

Section 110(a)(2)(D) requires SIPs to contain adequate provisions prohibiting emissions from "any source or other type of emissions activity within the State" that "contribute significantly" to NAAQS nonattainment in another state. Here, EPA mandates that 22 states and the District of Columbia implement section 110(a)(2)(D) using its NOx budget system. In essence, the NOx budget in question is an EPA mandate prohibiting NOx emissions in the 23 jurisdictions from exceeding a tonnage specific to that jurisdiction. *See* 63 Fed. Reg. 57,356 at 57,491493 (1998). Of concern to petitioners, the budget rule prohibits states from seeking compliance, in whole or part, by controlling VOC emissions even though VOCs as well as NOx emissions contribute to ozone problems. *See, e.g., id.* at 57,359; *see also* 40 C.F.R. § 52.31(b)(7) (1998) (defining ozone precursors).

Yet, the budget plan's defining aspects do not necessarily cause the program to conflict with the limiting principles contained in *Train* and *Virginia*. Analyzing the budget rule together with the relevant precedent, we hold that based on section 110's silence, EPA reasonably interpreted section 110 as providing it with the authority to determine a state's NOx significant contribution level and agree with EPA that the NOx budget plan does no more than project whether states have reduced emissions sufficiently to mitigate interstate transport. *See* 63 Fed. Reg. at 57,368.

Under section 110, EPA must "approve a [SIP] submittal as a whole if it meets all of the applicable requirements of [the Act]." 42 U.S.C. § 7410(k)(3). While the states have considerable latitude in fashioning SIPs, the CAA "nonetheless subject[s] the States to strict minimum compliance requirements" and gives EPA the authority to determine a state's compliance with the requirements. *Union Elec. Co.*, 427 U.S. at 256-57 (referring to the requirements contained in the statute). Given EPA's authority to ensure that submitted SIPs adequately prohibit significantly contributing emissions, EPA permissibly relied on its general rulemaking authority to prospectively inform the states of EPA's significance determinations.

Moreover, EPA does not tell the states how to achieve SIP compliance. Rather, EPA looks to section 110(a)(2)(D) and merely provides the levels to be achieved by state-determined compliance mechanisms. Specifically, EPA set NOx reduction levels based, in part, on assumptions about reductions obtainable through highly cost-effective controls. *See* Final Rule, 63 Fed. Reg. at 57,426. However, EPA made clear that states do not have to adopt the control scheme that EPA assumed for budget-setting purposes. *See id.* at 57,369-370. States can choose from a myriad of reasonably cost-effective options to achieve the assigned reduction levels. *See, e.g., id.* at 57,438 (noting possibilities with regard to mobile sources); *id.* at 57,378 (noting possibilities with regard to stationary sources); *id.* at 57,416. While EPA bases the budgets here on "highly cost-effective" control measures, the states remain free to implement other "cost-effective" or "reasonably cost-effective" measures in place of the ones

identified by EPA. *See id.* at 57,378; 63 Fed. Reg. 60,318 at 60,328 (1997) (noting that "one State may choose to primarily achieve emissions reductions from stationary sources while another State may focus on emissions reductions from the mobile source sector"). More importantly, EPA went so far as to give the states "full discretion in selecting . . . controls," 63 Fed. Reg. at 57,378, thereby allowing states to attain their budgets by imposing even quite unreasonable, very cost-ineffective controls. In *Virginia*, we did not bar EPA from permitting more costly alternatives but rather alternatives states would consider "unreasonable or impracticable." Here, EPA accommodates *Virginia's* mandate by allowing reasonable control alternatives and allowing states to focus reduction efforts based on local needs or preferences. *See* 63 Fed. Reg. at 57,369; *id.* at 57,399-405; 62 Fed. Reg. at 60,328. Thus, real choice exists for the covered states.

Regarding EPA's decision not to rely on VOC reductions, EPA reasonably concluded that long-range ozone transport can only be addressed adequately through NOx reductions. Petitioners' reliance and emphasis on VOC reductions in lieu of NOx reductions ignores the scientific basis for EPA's rule. OTAG and EPA concluded that VOC controls would not effectively address interstate ozone transport. Furthermore, states can cure any NOx reduction "disbenefits" with corresponding optional VOC controls. *See* 62 Fed Reg. at 60,344-345; 63 Fed. Reg. at 57,425. Thus, the SIP call cannot be invalidated merely because EPA reasonably chose not to regulate VOCs.

In sum, we conclude that EPA's NOx budget program reasonably establishes reduction levels and leaves the control measure selection decision to the states. In addition, unlike the rule invalidated in *Virginia*, states implementing alternative control measures will not be penalized with more stringent emissions targets. Since the challenged budget program does not mandate a "specific, source-by-source emission limitation[ ]," the NOx budget plan does not run afoul of Train or Virginia.

B. Regulatory Flexibility Act

The Regulatory Flexibility Act ("RFA"), 5 U.S.C. §§

601-612, as amended in 1996 by the Small Business Regulatory Enforcement Fairness Act ("SBREFA"), Pub. L. No. 114-121, Title II, 110 Stat. 847, 857-74, §§ 201-253 (codified at 5 U.S.C. §§ 601-612 (1994 & Supp. 111996)), requires an agency, when proposing a rule for notice and comment, to prepare and make available for public comment an initial regulatory flexibility analysis . . . . [that] describe[s] the impact of the proposed rule on small entities," 5 U.S.C. § 603(a), including small businesses, small organizations, and small governmental jurisdictions. *See id.* § 601(6). In addition, when promulgating a final rule, an agency must "prepare a final regulatory flexibility analysis" that describes, among other things, "a summary of the significant issues raised by the public comments in response to the initial regulatory flexibility analysis, a summary of the assessment of the agency of such issues," and "the steps the agency has taken to minimize the significant economic impact on small entities." *Id.* § 604(a).

However, these analyses are not required if the agency "certifies that the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities." *Id.* § 605(b). In the instant case, EPA certified that the proposed and final rule will not have a significant economic impact on a substantial number of small entities and, accordingly, did not perform any regulatory flexibility analysis. *See* Final Rule, 63 Fed. Reg. at 57,478; Proposed Rule, 62 Fed. Reg. at 60,375. RFA petitioners contend that EPA's certification was improper and in violation of the RFA. We disagree.

The court has consistently held that the RFA imposes "no obligation to conduct a small entity impact analysis of effects on entities which it does not regulate." *Motor & Equip. Mfrs. Ass'n. v. Nichols*, 142 F.3d 449, 467 (D.C. Cir. 1998) (quoting *United Distribution Cos. v. FERC*, 88 F.3d 1105, 1170 (D.C. Cir. 1996)); *see also American Trucking*, 175 F.3d at 1044. Therefore, the key issue in evaluating EPA's § 605(b) certification is whether the NOx SIP call "regulates" small entities.

EPA based its certification on its view that the NOx SIP call "would not establish requirements applicable to small entities" because "it would require States to develop, adopt,

and submit SIP revisions that would achieve the necessary NOx reductions and would leave to the States the task of determining how to obtain those reductions, including which entities to regulate." Final Rule, 63 Fed. Reg. at 57,478. We agree with EPA's statement that the SIP call does not directly regulate individual sources of emissions. The instant case is thus analogous to *American Trucking*, which upheld EPA's certification under § 605(b) because the revised NAAQS at issue "regulate small entities only indirectly–that is, insofar as they affect the planning decision of the States." *American Trucking*, 175 F.3d at 1044. Therefore, we conclude that EPA's certification under § 605(b) is justified.

IV. Remaining Claims

A. Definition of "NOx Budget Unit"

RFA petitioners also contend that EPA arbitrarily revised the definition of a "NOx budget unit" to bring certain small sources within the scope of the core group of emission-producing sources to which the NOx Budget Trading Rule ("model trading rule") applies.[6] This contention is meritless.

The core group definition is used to set the minimum requirements that a State would have to include in its trading rule in order to participate in the EPA-managed multi-state trading program. *See id.* at 57,461. EPA viewed that setting such requirements was necessary for controlling the administrative costs of managing the trading program. See id.

In the proposed rule, a "NOx budget unit" was defined as a boiler that either serves electricity generators with a capacity greater than 25 megawatts ("MW") or does not serve generators but has a design heat capacity of greater than 250 million Btu/hr ("mmBTu/hr"). *See* Supplemental Notice for the Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone ("Supplemental Notice of Proposed Rule"), 63 Fed. Reg.

[6] To assist states in meeting their budgets and to facilitate the most cost-effective reductions, the SIP call established a model rule for interstate trading of NOx "allowances." Each state can choose whether to adopt the model rule, which will be administered by EPA, to adopt its own trading program, or to have no trading program at all. *See* Final Rule, 63 Fed. Reg. at 57,456-58.

25,902, 25,978 (1998). EPA sought comment on "the appropriateness of including [such] categories ..., whether the size cut-offs should be higher or lower for these source categories, and the appropriateness of including other source categories in the core group." *Id.* at 25,923. In the final rule, EPA discussed and revised the definition to expand the core group by including large boilers--those with design heat capacity of greater than 250 mmBtu/hr--even if they served generators with a capacity less than 25 MW. *See* Final Rule, 63 Fed. Reg. at 57,518. EPA explained that it was making this change in order to address the concern raised in the comments about excluding large boilers with high levels of emission just because they happen to serve small generators. *See id.* at 57,461.

EPA's revision is reasonable. The only argument that RFA petitioners seem to have against the change is that it contradicts EPA's statement elsewhere that "small electrical generators less than 25 MW . . . will be exempt under the final model rule." *Id.* at 57,463. It is unclear why this statement renders EPA's final action arbitrary. EPA's definition of a NOx budget unit and the reasons for its change are set forth in the preamble to the final rule, and the most that the RFA petitioners have demonstrated is that EPA made at least one statement that was, as EPA concedes in its brief, "incomplete in that it did not address the case of large boilers with small generators." Such a minor oversight in the drafting of the preamble to the final rule does not render the substantive decision by EPA arbitrary.

B. Council of Industrial Boiler Owners

1. Introduction

In the rulemaking, EPA distinguished between electricity generating units ("EGUs") and non-electricity generating units ("non-EGUs"). Council of Industrial Boiler Owners ("CIBO"), a trade association whose membership consists of companies and universities operating industrial boilers and turbines ("industrial boilers"), which constitute one category of non-EGUs, challenges the NOx SIP call for being based on the following arbitrary and capricious actions by EPA: EPA's failure to determine whether non-EGUs are

significant contributors, EPA's flawed cost assumptions in its determination of cost-effective control measures for non-EGUs, EPA's erroneous calculation of non-EGU budgets, and EPA's arbitrary redefinition of the term "EGU." We agree only that EPA's redefinition of EGUs was arbitrary and capricious.

2. Significant Contribution of Industrial Boilers

CIBO challenges EPA's decision to include non-EGU boilers in the rule without having isolated non-EGU emissions to determine whether they "significantly contribute" to the interstate ozone transport problem and whether implementing highly cost-effective emissions reduction measures on industrial boilers would ameliorate nonattainment in downwind states. CIBO maintains that non-EGU boilers typically have significantly shorter stacks than EGUs and that their emissions, as a result, fall below the "mixing layer" that promotes long-range NOx transport. Therefore, CIBO contends, industrial boilers as a group can have no impact on long-range ozone transport. However, this factual claim fails in view of contrary evidence in the record. OTAG's Executive Report states as one of its major conclusions that "[b]oth elevated (from tall stacks) and low-level NOx reductions are effective." Executive Report at 4. EPA reiterated this finding by OTAG in the NPRM, *see* Proposed Rule, 62 Fed. Reg. at 60,332, it relied on the finding, and it appears that members of CIBO never challenged it during the comment period. Therefore, we cannot say EPA's inclusion of non-EGUs in the group of significantly contributing sources was arbitrary.

3. Cost-Effectiveness Calculation for Industrial Boilers' Control Measures

CIBO also challenges EPA's conclusion that industrial boilers could achieve a 60% emissions reduction using highly cost-effective control measures, *see* Final Rule, 63 Fed. Reg. at 57,418, as based on flawed cost calculations. More specifically, CIBO lists the following alleged problems in EPA's cost assumptions:

-EPA's assumption of 10 years as the lifetime of all control measures for industrial boilers, except for selective

catalytic reduction and selective non-catalytic reduction controls, for which 20 years was assumed.

-EPA's use of a 10% discount rate, not 7%, in its cost-effectiveness analysis.

-EPA's failure to take into account the fact that control effectiveness can vary by as much as 10% to 20%.

-EPA's failure to take into account cost and feasibility implications of load variability and firing of multiple fuels.

-EPA's assumption of NOx emission allowance costs of $2,000 per ton, when emission allowances trade for $5,500 to $6,300 per ton.

The general problem of these criticisms is that CIBO merely lists several items as problems and labels all of them "irrational" without explaining why its claims should concern the court. Given that almost all of CIBO's challenges involve technical details on which the court generally defers to the agency's expertise, CIBO's failure to explain why the so-called problems it identifies amount to an arbitrary and capricious decisionmaking is fatal to its claims.[7] Therefore, we reject CIBO's claims regarding EPA's underlying cost assumptions about industrial boilers.

4. Determination of Non-EGU Component of State NOx Budgets

[7] For instance, the last item on the list, that it is arbitrary and capricious for EPA to assume NOx emission allowance costs of $2,000 per ton when emission allowances now trade for $5,500 to $6,300 per ton, is insufficiently explained. Of course, if the firms in the market generating entitlement prices of $5,500 to $6,300 per ton were regulated at the same degree of stringency as EPA contemplates for firms expected to be burdened under the present rule, the market price would be strong evidence that compliance would cost far more than the $2,000 per ton figure that EPA has used. No one would pay $6,000 for an entitlement to emit a ton that he could remove at a cost of $2,000; the price of an entitlement could not exceed the marginal removal cost. But if the prices to which CIBO points arose among firms more stringently regulated, there would be no such contradiction. CIBO has not even endeavored to show equivalent stringency.

CIBO contends that EPA's calculation of the non-EGU component for the State NOx budget lacks adequate support in the record and lists the following as problems:

- Non-EGU inventories had errors.

- EPA's use of Bureau of Economic Analysis growth factor to project 2007 emission levels have "inherent error."

- EPA employed "crude extrapolations" to identify large non-EGU boilers.

- The "default boiler capacity file" is not in the record and the record does not reveal how EPA manipulated the data.

- The source of Bureau of Economic Analysis growth factors is not identified in the record, and the record does not show how EPA manipulated the data.

- It is unknown whether EPA credited NOx reductions from fluidized-bed combustion technology.

Again, CIBO merely presents a list of problems without explaining why these alleged errors render EPA's rulemaking arbitrary or capricious. In addition, CIBO members had repeated opportunities to provide correct information for some of these items during the rulemaking process. CIBO's poorly articulated, blanket accusations at this late stage contribute little to improve the quality of agency rulemaking; therefore, we reject CIBO's challenges regarding EPA's calculation of NOx budgets for non-EGUs.

5. Definition of EGU

More persuasively, CIBO contends that EPA revised the definition of "EGU" without adequate notice. Throughout the rulemaking, EPA defined an EGU as it did under the acid rain program, which excludes from the category of "utility units" those cogeneration units that sell less than one-third of their potential electrical output capacity or less than 25 MW per year. *See* 42 U.S.C. § 7651a(17)(C). However, two months after the promulgation of the rule, EPA redefined an EGU as a

unit that serves a "large" generator (greater than 25MW) that sells electricity. CIBO contends that EPA did not provide sufficient notice and opportunity to comment on this revision, especially considering that the industrial boilers have relied on the previous definition for a number of years. We agree.

EPA maintains that it provided adequate notice in the May 1998 supplemental notice, stating that "deregulation of electric utilities" means that "it is not clear how ownership of the electricity generating facilities will evolve." Supplemental Notice of Proposed Rule, 63 Fed. Reg. at 25,923. Given that "there is no relevant physical or technological difference between utilities and other power generators," EPA proposed, "all large electricity generating sources, regardless of ownership," should be treated the same. *Id.* There are several problems with EPA's response. First, it is undisputed that EPA was departing from the definition of EGUs as used in prior regulatory contexts, and EPA was not explicit about the departure from the prior practice until two months after the rule was promulgated. Neither the proposed rulemaking in November 1997 nor the final rule in October 1998 introduced the new definition. EPA waited until the December 1998 correction notice to announce that it will "classify as an EGU any boiler . . . that is connected to a generator greater than 25 MWe from which any electricity is sold." Correction and Clarification to the Finding of Significant Contribution and Rulemaking for Purposes of Reducing Regional Transport of Ozone ("Correction Notice to Final Rule"), 63 Fed. Reg. 71,220, 71,223 (1998). After the December correction notice, EPA reopened the comment period for sixty days for comments on this and other issues. In EPA's May 1999 response to the comments, EPA, for the first time, discussed why the change was necessary and offered a justification largely based on recent changes in the electric power industry. See Responses to the 2007 Baseline Sub-Inventory Information and Significant Comments for the Final NOx SIP Call 10-12 (May 1999) ("Responses to Final Comments").

As to the statement in the May 1998 supplemental notice that EPA claims constitutes notice, this statement was given in EPA's discussion of how the core group of sources for the model trading rule should be defined, and not in the context of a discussion about the general distinction between

EGUs and non-EGUs for the purposes of calculating state budgets. *Cf. Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 550 (D.C. Cir. 1983). Moreover, EPA also explicitly observed in the same May notice discussion about the model trading rule that "[m]any of the definitions ... are the same as those used in . . . the Acid Rain Program regulations, in order to maintain consistency among programs." Supplemental Notice of Proposed Rule, 63 Fed. Reg. at 25,923. Given the vague and conflicting signals that EPA was sending, it is an exaggeration to state that some general "theme" of the regulatory consequences of deregulation of the utility industry throughout rulemaking meant that EPA's last- minute revision of the definition of EGU should have been anticipated by industrial boilers as a "logical outgrowth" of EPA's earlier statements. *See American Water Works Ass'n. v. EPA*, 40 F.3d 1266, 1274-75 (D.C. Cir. 1994).

EPA contends that even assuming that CIBO did not have adequate notice and opportunity to comment on the EGU definition, the error has been cured because it reopened the comment period on this issue after its announcement of the revision. *See* Correction Notice to Final Rule, 63 Fed. Reg. at 71,221-23. This response is to no avail. During the new comment period, some commenters complained that there had not been sufficient notice and opportunity to comment on the EGU redefinition. *See* Responses to Final Comment, at 12. EPA's response to this charge primarily relied on the claim that there had been adequate notice prior to the redefinition, see id., and we have already rejected that argument.

Therefore, we conclude EPA did not provide sufficient notice and opportunity to comment for its redefinition of EGUs and remand the rulemaking to EPA for further consideration in light of this opinion.

C. IINGAA

Interstate Natural Gas Association of America ("TNGAA"), a trade association that represents major interstate natural gas transmission companies in the United States, contends that EPA did not provide adequate notice and opportunity to comment on the control level assumed for "large" stationary internal combustion ("IC") engines in its

determination of state NOx budgets. We agree.

EPA's NPRM in November 1997 assumed a 70% control level for large IC engines, *see* Proposed Rule, 62 Fed. Reg. at 60,354, after considering and rejecting an 80% control level. *See id.* at 60,348. Then, in the supplemental notice in May 1998, EPA continued to assume the 70% control level. *See* Supplemental Notice of Proposed Rule, 63 Fed. Reg. at 25,908. EPA stated in the same notice that it "intends to further analyze" control approaches for IC engines and said that "[a]s the above analyses are completed, EPA intends to place them in the docket." *Id.* at 25,909. EPA did not present a new analysis until September 4, 1998, when it concluded that a 90% control level was more appropriate for large IC engines. See Technical Support Document for Stationary International Combustion Engines 2 (September 4, 1998). When the rule was finally promulgated in October 1998, EPA stated that it was assuming a 90% control level. *See* Final Rule, 63 Fed. Reg. at 57,418.

INGAA contends that EPA's switch from 70% to 90% for large IC engines was unanticipated and that EPA should have allowed comments on the issue. Considering EPA's repeated affirmation of the 70% assumption throughout rule-making and rejection of a higher, 80% assumption earlier, a revision in its assumption less than one month before the final rule was promulgated hardly provided adequate notice, especially given the magnitude of the consequences of the proposed change on the regulated bodies. Therefore, we remand for further consideration on this issue.[8]

In addition, INGAA challenges EPA's definition of large IC engines. EPA, in the final rule, distinguished between large and small sources by defining a "cutoff level." 63 Fed. Reg. at 57,414. EPA assumed no control for sources below the cutoff level and defined small sources as units with a capacity less than or equal to 250 mmBtu/hr and with emissions less than or equal to one ton per day. *See id.* at 57,415. EPA added that "EPA is relying on a capacity approach first and a tons per day approach second (where a capacity data is not

[8] INGAA further contends that, even putting aside the notice issue, the documents that EPA relies on do not support EPA's assumption of 90% control level. Because we are remanding on the basis of the conclusion that there was inadequate notice, we do not reach the merits of the issue.

available or appropriate)" to define small sources. *Id.* at 57,416. Then, in the December correction notice, EPA largely repeated the same methodology for determining the cutoff level, but added that "[a] stationary internal combustion engine and a cement plant were determined to be 'large' if its 1995 average daily ozone season emissions were greater than one ton." Correction Notice to Final Rule, 63 Fed. Reg. at 71,224.

INGAA contends that EPA did not follow its own standard in the correction notice and singled out IC engines and cement plants without explanation. Although EPA's various statements on this issue throughout rulemaking have not always been very clear or entirely consistent, EPA went through an extensive comment period on this issue, *see* Final Rule, 63 Fed. Reg. at 57,415-17, and we agree with EPA that the change that INGAA criticizes for being arbitrary is merely a minor clarification that satisfies the reasonableness standard.

D. PP&L

1. EPA's Restrictions on Early Reduction Credits

PP&L, an electric utility that owns several generating stations in Pennsylvania, contends that EPA arbitrarily limited the number of "early reduction credits" ("ERCs"). We disagree.

Under the SIP call, a source can generate ERCs if it reduces its NOx emissions before May 2003 to a level below that is required by any regulatory scheme. ERCs can then be used to compensate for emitting emissions above required levels in a later time period. *See* Final Rule, 63 Fed. Reg. at 57,430. EPA limited the amount of available ERCs for each state to the size of each state's compliance supplement pool ("CSP"). *See id.* at 57,474. The CSP is an additional allowance of emissions that allows states to emit 200,000 tons of NOx in the 2003-2004 ozone seasons over the state emissions budgets. *Id.* at 57,428. EPA created the CSP in response to the comments that if all utilities had to install pollution control equipment by May 1, 2003, there might be disruptions in

electricity supply. *See id.* If a state chooses to use the CSP, it can either provide ERCs or distribute the allowances to sources that demonstrate a need for the compliance supplement. *See id.* at 57,429-30.

PP&L contends that imposing this limit on the number of ERCs is arbitrary and capricious because placing any limit on ERCs is environmentally counterproductive. We do not find this contention persuasive. EPA noted during the comment period that ERCs, although generally beneficial, can be costly in that they allow states to exceed their budgets. *See* Responses to Significant Comments on the Proposed Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group (OTAG) Region for Purposes of Reducing Regional Transport of Ozone 346 (September 1998) ("Responses to Comments"). EPA noted further that the CSP, by establishing a cap on the number of allowances to be distributed, limited such potential costs. *Id.* EPA's decision is thus reasonable.

PP&L also contends that EPA has not demonstrated why the "flow control mechanism" is not sufficient to address its concern. Under the flow control mechanism, the use of banked allowances exceeding 10% of the emissions budget for sources in the trading program is either flatly prohibited or discouraged by discounting the value of ERCs used as such, and states can choose between either method. *See* Final Rule, 63 Fed. Reg. at 57,431-32. This complaint by PP&L overlooks the fact that EPA included the flow control mechanism in the regulatory scheme "[a]s a final safeguard limiting the impact of additional allowances eligible for banking in the system." Responses to Comments, at 346. Therefore, it was a safeguard created in addition to the CSP limitation. It was within EPA's discretion to devise multiple limitations to contain the environmental cost of ERCs.

PP&L further contends that, even if it is rational for EPA to place a limit on the amount of ERCs, EPA's choice of setting the limit at the same amount as the CSP is arbitrary and capricious. This contention fails as well. The record shows that EPA allowed ERCs merely as a mechanism for managing the CSP, not as an independent program with a purpose separate from that of the CSP. *See* Final Rule, 63 Fed. Reg. at

57,428-33. Therefore, EPA's decision to limit the amount of ERCs to the size of the CSP was reasonable.

2. Emissions Multiplier for Low Mass Emission Units

PP&L also contends that EPA arbitrarily required "low mass emission units" ("LMEUs") to use a 15% multiplier to calculate their emissions. We disagree.

EPA allows LMEUs either to use a generic default NOx or to determine a unit-specific NOx emission rate by conducting a stack test once every five years. Because EPA found that the stack test results can vary by 15% or more depending on atmospheric conditions, EPA requires an LMEU to calculate its emissions rate by adding 15% to the stack test result. *See* Final Rule, 63 Fed. Reg. at 57,490.

PP&L contends that this is unreasonable because EPA has stated that the testing would likely underestimate emissions during cooler less humid conditions. *See id.* PP&L reasons that because the SIP call applies only during summer seasons (when ozone forms), that the stack test underestimates emissions during the winter cannot justify the 15% multiplier. This contention is to no avail. Because the record contains evidence that NOx rates determined by the stack test can vary widely even during the ozone season, EPA's decision was reasonable. *See* Docket A-97-35, Item IV-A-1 at 43-54 (August 26, 1998).

Conclusion

We vacate EPA's final rule with respect to Wisconsin, Missouri, and Georgia (*see* Part II.A-B). These cases are remanded for further consideration in light of this opinion. We hold that EPA failed to provide adequate notice of a change in the definition of an electric generating unit (*see* Part IV.B.5), and that EPA did not provide adequate notice of a change in

the control level assumed for large stationary internal combustion engines (see Part IV.C). These cases are also remanded.

In all other respects, the petitions for review are denied.

So ordered.

Sentelle, Circuit Judge, dissenting: Unlike the majority's journey through this regulatory scheme, mine is neither lengthy nor complex, because I get off at the first strop. In promulgating the regulations at issue, EPA purported to exercise the authority Congress conferred upon it to enforce the requirements of 42 U.S.C. § 7410(a)(2)(D)(i)(I) which empowers the Administrator to police the contents of State Implementation Plans ("SIPs"), specifically to ensure that such plans contain

> adequate provisions . . . prohibiting . . . any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard . . . .

42 U.S.C. § 7410(a)(2)(D)(i)(I) (1994) (emphasis added). EPA is a federal agency—a creature of statute. It has no constitutional or common law existence or authority, but only those authorities conferred upon it by Congress. If there is no statute conferring authority, a federal agency has none. The only statute upon which EPA purports to rely in the current controversy is § 7410(a)(2)(D)(i)(I). That section provides authority for EPA to require States to act in a certain fashion based upon the presence of sources or activities which emit "pollutants in amounts which will . . . contribute significantly to nonattainment." It would appear to me that Congress clearly empowered EPA to base its actions on amounts of pollutants, those amounts to be measured in terms of significance of contribution to downwind nonattainment. Instead, EPA has chosen, doubtless in the pursuit of beneficent ends, to assert authority to require the SIPs to contain provisions based not on the amounts of pollutants, nor even on the relative significance of the contributions of such pollutants to downwind nonattainment, but on the relative cost effectiveness of alleviation. I agree with the State petitioners that it is undeniable that EPA has exceeded its statutory authority.

We have before had occasion to remind EPA that its mission is not a roving commission to achieve pure air or any

other laudable goal. In *American Petroleum Institute v. United States EPA*, 52 F.3d 1113 (D.C. Cir. 1995), we reviewed an EPA rule requiring that thirty percent of the oxygen in reformulated gasoline be derived from renewable sources, such as ethanol. The statutory authority under which EPA operated, 42 U.S.C. § 7545(k)(1) empowered EPA to promulgate regulations achieving "the greatest reduction in emissions of ozone forming volatile organic compounds 42 U.S.C. § 7545(k)(1). Although EPA advanced commendable goals of economic benefit for its inclusion of the additional goal of ethanol market protection, we struck down the overreaching and reminded EPA that "it is axiomatic that an administrative agency's power to promulgate legislative regulations is limited to the authority delegated by Congress." *API*, 52 F.3d at 1119 (*quoting Bowen v. Georgetown Univ. Hosp.*, 488 U.S. 204, 208 (1988)).

Similarly, in *Ethyl Corp. v. EPA*, 51 F.3d 1053 (D.C. Cir. 1995), we considered EPA's denial of a Clean Air Act waiver application based on health considerations. We did not suggest that EPA acted in bad faith or that health considerations were not important, but we repaired to the statutory grant of authority in 42 U.S.C. § 7545(f)(4), which based the Administrator's authority to deny waiver solely on the property of an additive to "cause or contribute to a failure of any emission control device or system 42 U.S.C. § 7545(f)(4). We again granted the petition for review of the Administration's action, reminding EPA that where "the plain language of a provision makes it clear that . . . decisions are to be based on one criterion, the EPA cannot base its decision on other criteria," even on a criterion as laudable as the health of the public. *Ethyl Corp.*, 51 F.3d at 1058.

For all the majority's discussion of inconsistent arguments by States and the possibility of taking costs into account elsewhere raised by the Administration and adopted by the majority, I do not see why the present controversy does not fall squarely within the four corners of API and Ethyl Corp.

Congress set forth one criterion: the emission of an amount of pollutant sufficient to contribute significantly to downwind nonattainment. EPA adopted a different criterion:

the cost effectiveness of alleviation. I would remind the agency once more of the lessons of API and Ethyl Corp., allow the petitions for review, and end the case.

The majority makes a fundamental mistake by divorcing the adverb "significantly" from the verb it modifies, "contribute." The majority compounds its error by divorcing significantly from the rest of the statutory provision in issue. Maj. Op. at 19-23. By focusing on "significance" or what it means to be "significant," the majority ignores the fact that the statute permits EPA to address that which is "contribut[ed] significantly." 42 U.S.C. § 7410(a)(2)(D)(i)(I) (emphasis added). And what should EPA look for as being contributed significantly? Congress clearly answered that question for the agency as being an "amount" of an "air pollutant." *Id.* Considering that Congress expressly gave EPA authority with regard to "any air pollutant in amounts which will contribute significantly to nonattainment . . .," *id.* (emphasis added), I marvel at an interpretation that permits cost effectiveness to find a place in a statutory provision addressing amounts of air pollutant contribution. While the contribution must affect nonattainment significantly, no reasonable reading of the statutory provision in its entirety allows the term significantly to springboard costs of alleviation into EPA's statutorily-defined authority. Given § 7410(a)(2)(D)(i)(I) mandate as a whole, it becomes clear that EPA and the majority have to contort the statute's language by isolating the term significantly and ignoring the terms air pollutant, amounts, and contribute in order to work cost considerations into the statute. I just cannot agree with such an unusual exercise in statutory construction. I see nothing in *Chevron U.S.A. Inc. v. NRDC, Inc.*, 467 U.S. 837 (1984), that either compels or counsels the majority's result. EPA argues that Congress did not define significant contribution. True, it did not. Neither did it define amount. But neither EPA nor the majority have offered any reasonable interpretation of those words which makes them depend upon or even relate to the cost

effectiveness of alleviation.[1] EPA comes close to arguing: Congress has not expressly forbidden us to use this criterion, therefore we may use it. As we said in *Ethyl Corp.*:

> To suggest, as the [EPA] effectively does, that Chevron step two is implicated any time a statute does not expressly negate the existence of a claimed administrative power . . ., is both flatly unfaithful to the principles of administrative law . . . and refuted by precedent. 51 F.3d at 1060. Because the majority's deference to EPA's unreasonable statutory interpretation as couched in the agency s scurrilous "second-step" cost effectiveness analysis ventures off track, as I said, I am getting off at the first stop.

Because I would invalidate the regulatory scheme before us at its inception, I will not address the subsidiary issues pursued by my colleagues.

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[1]Contrary to the suggestion of the majority, neither of the cases cited by the majority bear any implication that the cost of alleviating or otherwise dealing with risk expressed as a noun or a verb has any effect upon the definition of "significant" or "significantly" used as an adjective or adverb modifying that noun or verb. The portion of *Industrial Union Department v. American Petroleum Institute*, 448 U.S. 607, 655 (1980) (plurality opinion) quoted by the majority to the effect "that a 'significant' risk . . . is not a mathematical straitjacket," (Maj. Op. at 20) does not deal in any fashion with the cost of alleviation. Rather, Justice Stevens in that opinion was contrasting the significance of a one-in-a-billion chance of cancer from drinking chlorinated water against the one-in-a-thousand risk that regular inhalation of certain benzene-containing vapors would be fatal. Obviously, the "significance" of the risk deals with its importance, not the cost of its alleviation. Equally off point is *International Union, United Auto Workers v. OSHA*, 37 F.3d 665, 668-69 (D.C. Cir. 1994), which concerned the cost-effectiveness of alleviating measures directed at risk theretofore determined to have been significant, not with the use of cost-effectiveness in determining the significance of the risk velnon.

APPENDIX B

[Filed June 22 2000]

United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 98-1497
September Term, 1999

State of Michigan, Michigan Department of Environmental Quality and State of West Virginia, Division of Environmental Protection,
Petitioners

v.

Environmental Protection Agency,
Respondent

New England Council, Inc., et al.,
Intervenors

Consolidated with
98-1499, 98-1500, 98-1501, 98-1502, 98-1504, 98-1518, 98-1556, 98-1567, 98-1573,98-1585, 98-1588, 98-1590, 98-1596, 98-1598, 98-1601, 98-1602, 98-1608, 98-1609, 98-1611, 98-1615, 98-1616, 98-1617, 98-1618, 98-1619, 98-1621, 99-1070, 99-1093

BEFORE: Edwards, Chief Judge; Silberman, Williams, Ginsburg, Sentelle, Henderson, Randolph, Rogers, Tatel and Garland, Circuit Judges

ORDER

The petitions for rehearing en banc of the Industry/Labor petitioners, the petitioning States, and the response thereto have been circulated to the full court. The taking of a vote was requested. Thereafter, a majority of the judges of the court in regular active service did not vote in favor of the petition. Upon consideration of the foregoing, it is

ORDERED that the petition be denied.

Per Curiam

FOR THE COURT:

Mark J. Langer, Clerk

BY: /s/ Robert A. Bonner
Deputy Clerk

Circuit Judge Sentelle would grant the petition of the Industry/Labor petitioners and Part I of the petition of the petitioning States.

Circuit Judges Tatel and Garland did not participate in this matter.

APPENDIX C

[Filed June 22, 2000]

United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 98-1497
September Term, 1999

State of Michigan, Michigan Department of Environmental Quality and State of West Virginia, Division of Environmental Protection,
Petitioners

v.

Environmental Protection Agency,
Respondent

New England Council, Inc., et al.,
Intervenors

Consolidated with
98-1499, 98-1500, 98-1501, 98-1502, 98-1504, 98-1518, 98-1556, 98-1567, 98-1573,98-1585, 98-1588, 98-1590, 98-1596, 98-1598, 98-1601, 98-1602, 98-1608, 98-1609, 98-1611, 98-1615, 98-1616, 98-1617, 98-1618, 98-1619, 98-1621, 99-1070, 99-1093

BEFORE: Williams, Sentelle and Rogers, *Circuit Judges.*

ORDER

Upon consideration of the petitions for rehearing of the Industry/Labor petitioners and of the petitioning States, filed April 20, 2000, and of the response thereto, it is

ORDERED that the petition be denied.

Per Curiam

FOR THE COURT:

Mark J. Langer, Clerk

BY: /s/ Robert A. Bonner
Deputy Clerk

Circuit Judge Sentelle would grant the petition of the Industry/Labor parties and Part I of the petition of the petitioning States.

APPENDIX D

MANDATE
Issued: 9/13/00
By: /s/ E. Brown, Deputy Clerk

United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA CIRCUIT

State of Michigan, Michigan Department of Environmental Quality and State of West Virginia, Division of Environmental Protection, Petitioners

v.

U.S. Environmental Protection Agency, Respondent

New England Council, Inc., et al., Intervenors

Consolidated with
98-1499, 98-1500, 98-1501, 98-1502, 98-1504, 98-1518, 98-1556, 98-1567, 98-1573,98-1585, 98-1588, 98-1590, 98-1596, 98-1598, 98-1601, 98-1602, 98-1608, 98-1609, 98-1611, 98-1615, 98-1616, 98-1617, 98-1618, 98-1619, 98-1621, 99-1070, 99-1093

Before: Williams, Sentelle and Rogers, Circuit Judges.

On Petitions for Review of an Order of the Environmental Protection Agency

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JUDGMENT

These causes came on to be heard on the petitions for review of an order of the Environmental Protection Agency and were argued by counsel. On consideration thereof, it is

ORDERED and ADJUDGED, by the Court, that the petitions for review in Nos. 98-1567 and 99-1093 are granted,

the petitions in Nos. 98-1609 and 98-1618 are granted in part and denied in part, and the remaining petitions are denied, all in accordance with the opinion for the Court filed herein this date.

FOR THE COURT:
Mark J. Langer, Clerk

By: /s/ Robert A. Bonner
Deputy Clerk

Date: March 3, 2000

Opinion Per Curiam
Dissenting opinion filed by Circuit Judge Sentelle.

APPENDIX E

SUPREME COURT OF THE UNITED STATES
OFFICE OF THE CLERK
WASHINGTON, DC 20543-0001

William K. Suter
Clerk of the Court

Area Code 202
479-3011

September 8, 2000

Mr. Thomas L. Casey
Law Building, 525 West Ottawa
P.O. Box 30212
Lansing, MI 48909-0212

Re: Michigan, et al.
v. Environmental Protection Agency,
et al.
Application No. 00A215

Dear Mr. Casey:

The application for an extension of time within which to file a petition for writ of certiorari in the above-entitled case has been presented to the Chief Justice, who on September 8, 2000, extended the time to and including October 20, 2000.

This letter has been sent to those designated on the attached notification list.

Sincerely,

WILLIAM K. SUTER, Clerk

By /s/ Jeffrey D. Atkins
Assistant Clerk

APPENDIX F

Part II

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 51, 72, 75, and 96

[[Page 57356]]

[FRL-6171-2]
RIN 2060-AH10

Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

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b. Pollution Abatement Requirements
c. Monitoring Requirements
d. Approvability of Trading Program
3. Sanctions
4. FIPs
B. Emissions Reporting Requirements for States
1. Use of Inventory Data
2. Response to Comments
3. Final Rule
4. Data Elements to be Reported
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6. Ozone Season Reporting
7. Data Reporting Procedures
8. Confidential Data
C. Timeline
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B. NOX Budget Trading Program Rulemaking Overview
C. General Design of NOX Budget Trading Program

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2. Alternative Market Mechanisms
3. State Adoption of Model Rule
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D. Applicability
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VIII. Interaction with Title IV NOX Rule
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4. Justification for Rulemaking
X. Administrative Requirements
A. Executive Order 12866: Regulatory Impact Analysis
B. Regulatory Flexibility Act: Small Entity Impacts
C. Unfunded Mandates Reform Act
D. Paperwork Reduction Act
E. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks
1. Applicability of E.O. 13045
2. Children's Health Protection
F. Executive Order 12898: Environmental Justice
G. Executive Order 12875: Enhancing the Intergovernmental Partnerships
H. Executive Order 13084: Consultation and Coordination with Indian Tribal Governments
I. Judicial Review
J. Congressional Review Act
K. National Technology Transfer and Advancement Act

Appendix A--Detailed Discussion of Changes to Part 75

CFR Revisions and Additions

Part 51
Sec. 51.121
Sec. 51.122
Part 72
Part 75
Part 96

I. Background
A. Summary of Rulemaking and Affected States

By notice of proposed rulemaking (NPR, proposal, or "proposed SIP call") (62 FR 60318, November 7, 1997) and by supplemental notice (SNPR or supplemental proposal) (63 FR 25902, May 11, 1998), EPA proposed to find that NOX emissions from sources and emitting activities (sources) in 23 jurisdictions (hereinafter also referred to as States) will significantly contribute to nonattainment of the 1-hour and 8-hour ozone NAAQS, or will interfere with maintenance of the 8-hour NAAQS, in one or more downwind States throughout the Eastern United States. The EPA based these proposals on data generated by OTAG, public comments, and other relevant information. Today's final action confirms that proposed finding. It also requires, under CAA section 110(a)(1) and 110(k)(5), that the 23 jurisdictions adopt and submit SIP revisions that, in order to assure that their SIPs meet the requirements of section 110(a)(2)(D)(i)(I), contain provisions adequate to prohibit sources in those States from emitting NOX in amounts that "contribute significantly to nonattainment in, or interfere with maintenance by," a downwind State. The 23 jurisdictions are: Alabama, Connecticut, Delaware, District of Columbia, Georgia, Illinois, Indiana, Kentucky, Massachusetts, Maryland, Michigan, Missouri, North Carolina, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, West Virginia, and Wisconsin.

Each of these States and the District of Columbia is required to adopt and submit by September 30, 1999, a SIP revision. The SIP revision must contain measures that will assure that sources in the State reduce their NOX emissions sufficiently to eliminate the amounts of NOX emissions that contribute significantly to nonattainment, or that interfere with maintenance, downwind. By eliminating these amounts of NOX emissions, the control measures will assure that the remaining NOX emissions will meet the level identified in today's rule as the State's NOX emissions budget. For simplicity, this final rule may refer to the amounts that such SIP provisions must prohibit in order to meet the statute as the "significant amounts" of NOX emissions. After prohibiting these significant amounts of NOX, the remaining amounts emitted by sources in the covered States will not "significantly contribute to nonattainment, or interfere with maintenance by," a downwind State, under section 110(a)(2)(D)(i)(I). Section II.C, Weight-of-Evidence Determination of Covered States,

describes how EPA determined which States include sources that emit NOX in amounts of concern (the "covered" States), and Sections II.D, Cost Effectiveness of Emissions Reductions; II.E, Comparison of Upwind and Downwind Costs; and III, Determination of Budgets, describe how EPA determined the significant amounts of emissions and the resulting statewide emissions budgets for the States identified above. Section IV, Air Quality Assessment, discusses air quality analyses conducted by EPA which help confirm the decisions and requirements set forth in this rulemaking. Section V, NOX Control Implementation and Budget Achievement Dates, primarily discusses the dates by which (1) the States must submit SIP revisions in response to today's action, (2) the sources must implement the measures the States choose for the purpose of prohibiting the significant amounts of NOX, and (3) the States are projected to achieve the budget levels. Section VI, SIP Criteria and Emissions Reporting Requirements, describes the SIP requirements themselves.

The SIP requirements permit each State to determine what measures to adopt to prohibit the significant amounts and hence meet the necessary emissions budget. Consistent with OTAG's recommendations to achieve

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NOx emissions decreases primarily from large stationary sources in a trading program, EPA encourages States to consider electric utility and large boiler controls under a cap-and-trade program as a cost-effective strategy. The recommended cap-and-trade program is described in more detail in Section VII, NOx Budget Trading Program. The EPA also recognizes that promotion of energy efficiency can contribute to a cost-effective strategy. In Section VIII, Interaction with Title IV NOx rule, EPA explains that it is not adopting proposed revisions to the title IV NOx rule concerning the relationship between this rulemaking and the title IV NOx rule. The remaining parts of today's action include Section IX, Non-Ozone Benefits of NOx Reductions, and Section X, Administrative Requirements.

The EPA also conducted a RIA which is available in the docket to this rulemaking as a technical support document (TSD), entitled "Regulatory Impact Analysis for the Regional NOx SIP Call" (docket no. VI-B-09). A detailed explanation of how EPA calculated the budgets is also available as a TSD

entitled "Development of Modeling Inventory and Budgets for the Regional NOx Call" (docket no. VI-B-10). These two TSDs have been revised for the final rulemaking. A detailed explanation of the air quality modeling analyses is also available, entitled "Air Quality Modeling Technical Support Document for the Regional NOx SIP Call" (docket no. VI-B-11) for this final rulemaking. This preamble for today's notice responds to some of the comments, but another document, entitled "Response to Significant Comments on the Finding of Significant Contribution and Rulemaking for Certain States in the OTAG Region for Purposes of Reducing Regional Transport of Ozone," is included in the docket (docket no. VI-C-01).

B. General Factual Background

In today's action, EPA takes a significant step toward reducing ozone in the eastern half of the country. Ground-level ozone, the main harmful ingredient in smog, is produced in complex chemical reactions when its precursors, volatile organic compounds (VOC) and NOx, react in the presence of sunlight. The chemical reactions that create ozone take place while the pollutants are being blown through the air by the wind, which means that ozone can be more severe many miles away from the source of emissions than it is at the source.

The science of ozone formation, transport, and accumulation is complex. Ozone is produced and destroyed in a cyclical set of chemical reactions involving NOx, VOC and sunlight. Emissions of NOx and VOC are necessary for the formation of ozone in the lower atmosphere. In part of the cycle of reactions, ozone concentrations in an area can be lowered by the reaction of nitric oxide with ozone, forming nitrogen dioxide; as the air moves downwind and the cycle continues, the nitrogen dioxide forms additional ozone. The importance of this reaction depends, in part, on the relative concentrations of NOx, VOC and ozone, all of which change with time and location.

At ground level, ozone can cause a variety of ill effects to human health, crops and trees. Specifically, ground-level ozone has been shown in clinical and/or epidemiologial studies to have the following health effects:

- Decreased lung function, primarily in children active outdoors

- Increased respiratory symptoms, particularly in highly sensitive individuals
- Hospital admissions and emergency room visits for respiratory causes among children and adults with pre-existing respiratory disease such as asthma
- Inflammation of the lung
- Possible long-term damage to the lungs or even premature death.

The new 8-hour primary ambient air quality standard (62 FR 38856, July 18, 1997) will provide increased protection to the public from these health effects.

Each year, ground-level ozone above background is also responsible for significant agricultural crop yield losses. Ozone also causes noticeable foliar damage in many crops, trees, and ornamental plants (i.e., grass, flowers, shrubs, and trees) and causes reduced growth in plants. Studies indicate that current ambient levels of ozone are responsible for damage to forests and ecosystems (including habitat for native animal species).

As part of the efforts to reduce harmful levels of smog, EPA, today, is establishing a requirement for certain States to revise their SIPs in order to implement the necessary regional-scale reductions in NOx emissions, and, thereby, reduce transported NOx and ozone. Since air pollution travels across county and State lines, it is essential for State governments and air pollution control agencies to cooperate to solve the problem.

Currently, the following areas, impacted by the 23 jurisdictions that are the subject of today's rulemaking, are designated nonattainment areas for ozone under the 1-hour NAAQS:

Atlanta, GA
Baltimore, MD
Birmingham, AL
Boston-Lawrence-Worcester (eastern MA), MA-NH
Chicago-Gary-Lake County, IL-IN
Cincinnati-Hamilton, OH-KY
Door County, WI
Greater Connecticut
Kent & Queen Anne's Counties, MD
Lancaster, PA
Louisville, KY-IN

Manitowoc County, WI
Milwaukee-Racine, WI
Muskegon, MI
New York-Northern New Jersey-Long Island, NY-NJ-CT
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD
Pittsburgh-Beaver Valley, PA
Portland, ME
Portsmouth-Dover-Rochester, NH
Providence (All RI), RI
St. Louis, MO-IL
Springfield (western MA), MA
Washington, DC-MD-VA

These areas include many of the major urban centers in the eastern half of the Nation. The combined population for these areas is approximately 61.5 million. As described elsewhere, the reductions called for in today's action will reduce ozone levels throughout these areas.

Many more areas currently violate the 8-hour NAAQS. The EPA estimates that a total population of approximately 73 million in the 23 jurisdictions live in counties for which air quality is monitored to be in violation of that NAAQS. The reductions called for in today's action will reduce ozone levels throughout these areas as well.

Moreover, as discussed below, many of these areas are expected to be classified as "transitional," which means, in most cases, that they are expected to come into attainment solely as a result of the reductions required by today's action. Thus, for those who live in these areas, the reductions required under today's action, in-and-of-themselves, are expected to mean the difference between unhealthful ozone levels and acceptable ozone levels.

Please note that EPA will not designate ozone nonattainment areas for the 8-hour NAAQS until 2000, and these designations will be based on the data that are most recently available at that time.

C. Statutory and Regulatory Background

1. CAA Provisions

a. 1970 and 1977 CAA Amendments. For almost 30 years, Congress has focused major efforts on curbing ground-level ozone. In 1970, Congress amended the CAA to require, in title I, that EPA issue, and periodically review . . .

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on ozone levels.5

\5\ Ozone Transport Ass
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In light of OTAG's work and additional information, EPA is able to assess ozone transport as it relates to the 8-hour NAAQS and to set forth requirements as necessary to address the 8-hour standard in this rulemaking. Ozone transport causes problems for downwind areas under either the 1-hour or 8-hour standard. The regional reductions of NOX that will be achieved through this SIP call for the 1-hour NAAQS are key components for meeting the new 8-hour ozone standard in a cost-effective manner. Therefore, EPA believes that the OTAG recommendations for how to address ozone transport are valid for both NAAQS.

Several commenters urged EPA to adopt and implement all Federal measures identified in the OTAG recommendations.6 The Agency is committed to continue implementing national control measures for NOX, as recommended by OTAG. In addition, EPA has adopted the following national measures for purposes of reducing VOC: architectural and industrial maintenance coatings, consumer/commercial products, and autobody refinishing. The EPA has made no decisions regarding further VOC reductions beyond the reductions specified as phase I in the OTAG recommendations.7

\6\ The OTAG recommendations are located in Appendix B of the November 7, 1997 NPR (62 FR 60376).

\7\ Letter to the Honorable Ken Calvert, Chairman, Subcommittee on Energy and Environment, U.S. House of Representatives, from Robert D. Brenner, Acting Deputy Assistant Administrator for Air and Radiation, U.S. EPA, June 26, 1998, transmitting EPA's responses to questions following the May 20, 1998 congressional hearing on EPA's proposed rule on paints and coatings.

Other more specific comments concerning the OTAG recommendations will be addressed throughout this rulemaking as the issues are discussed.

F. Discussion of Comment Period and Availability of Key Information

The EPA received numerous comments concerning the adequacy of the comment period for the November 7, 1997 NPR and May 11, 1998 SNPR. Some commenters remarked that the comment period for the NPR should be extended to

allow for development and review of technical information, including inventory data, growth factors, and the resulting budget. Commenters stated that the additional time was particularly necessary for subregional air quality modeling, which is modeling designed to isolate the impacts of emissions from a particular State or group of States on downwind areas. Many specifically requested an additional 120 days, and one requested an additional 9 months. Some commenters indicated that EPA did not incorporate their comments from the NPR into the SNPR. Other commenters insisted that key information supporting the rule is not publicly available. The EPA also received comments that additional public hearings should be held in other locations of the OTAG region.

1. Request for Extension of the Comment Period

The EPA allowed a 120-day public comment period for the November 7, 1997 NPR, which closed on March 9, 1998. By notice (63 FR 17349, April 9, 1998), EPA reopened the comment period for members of the public to submit additional modeling analyses, as well as comments concerning the implications that any additional modeling may have for the State NOx budgets under consideration in the November 7, 1997 proposal. The comment period was reopened through the end of the comment period on the SNPR. The SNPR, which was published on May 11, 1998, allowed a comment period until June 25, 1998. Thus, for most issues addressed in the NPR, including air quality modeling issues, commenters received an almost 8-month formal comment period. Indeed, many commenters had access to the NPR immediately after October 10, 1997, when it was signed and posted on an EPA website. The Agency also received a number of comments after June 25, 1998, which were also reviewed and considered in developing the final rule.

The EPA believes this additional opportunity for the public to submit comments was reasonable. After March 9, 1998--the initial date for close of the comment period on the NPR--EPA received numerous comments on various issues raised in the NPR, including air quality issues. Many of these comments were extensive, which indicates that commenters received adequate time.

With respect to the concern that EPA did not incorporate comments received on the NPR into the SNPR, it would not have been practical for EPA to incorporate

comments received on the NPR into the SNPR because the SNPR was completed soon after the close of the comment period for the NPR. In general, the SNPR addressed different aspects of the rule than the NPR, and one of the purposes of the SNPR was to take comment on several new issues, as noted above. The EPA has addressed comments on both the NPR and SNPR in today's action.

The major issues raised in the comments are responded to throughout the preamble of this final rule. A comprehensive summary of all significant comments, along with EPA's response to the comments which have not been responded to in the preamble (Response to Comments), can be found in the docket for this rulemaking (Docket No. A-96-56).

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problem that requires regional scale reductions (62 FR 60326).

Accordingly, EPA has adopted a "collective contribution" approach to determining whether sources "contribute" to nonattainment downwind: EPA determines the impact downwind of emissions in the aggregate from a particular geographic region. If the aggregated emissions are considered to contribute to nonattainment downwind, then all of the emissions in that region should be considered as contributors to that nonattainment problem. In today's action, EPA is continuing the same interpretation of the term "contribute," for the reasons just described.

(2) "Significantly". (a) Notice of Proposed Rulemaking. In the NPR, EPA proposed a "weight-of-evidence," or multi-factor, approach for determining whether a contribution is "significant."

The EPA proposed two separate interpretations for the term "contribute significantly," which had implications as to which factors were to be considered in what parts of the analysis. Under the first interpretation, significant contribution is determined with reference to--* * * factors concerning amounts of emissions and their ambient impact, including the nature of how the pollutant is formed, the level of emissions and emissions density (defined as amount of emissions per square mile) in the particular upwind area, the level of emissions in other upwind areas, the amount of contribution to ozone in the downwind area from the upwind areas, and the distance between the upwind sources and the downwind nonattainment problem. Under this approach, when emissions

and ambient impact reach a certain level, as assessed by reference to the factors identified above, those emissions would be considered to "contribute significantly" to nonattainment. (62 FR 60325).

Under this interpretation, after identifying amounts of emissions that constitute a significant contribution, EPA then determines the amount of emissions reductions necessary to adequately mitigate these contributions. This determination entails--* * * [e]valuation of the costs of available measures for reducing upwind emissions * * * as well as to the extent known (at least qualitatively), the relative costs of, amounts of reductions from, and ambient impact of measures available in the downwind areas. *Id.*

Under the second interpretation, EPA considers all of the factors under both the significant contribution prong and the mitigation prong of the first interpretation, and, once EPA determines an amount of emissions that does significantly contribute to downwind nonattainment, then EPA would determine that the SIP must contain provisions adequate to prohibit that amount of emissions. *Id.* at 60325-26.

(b) Today's Action. The EPA has determined that the second interpretation should be used; that is, that the determination of significant contribution includes both air quality factors relating to amounts of upwind emissions and their ambient impact downwind, as well as cost factors relating to the costs of the upwind emissions reductions. Once an amount of emissions is identified in an upwind State that contributes significantly to a nonattainment problem downwind, or interferes with maintenance downwind, the SIP must include provisions to eliminate that amount of emissions.

To reiterate, section 110(a)(2)(D)(i)(I) provides that the SIP must "prohibit[]" sources from "emitting any air pollutant in amounts which will contribute significantly to nonattainment in, or interfere with maintenance by, any other State." The term "prohibit" is defined as "to forbid by authority" or "prevent," or "preclude." "The American Heritage Dictionary of the English Language" (3d ed. 1992, 1448). The EPA believes that the term "prohibit" means that SIPs must eliminate those amounts of emissions determined to contribute significantly to nonattainment or interfere with maintenance downwind. Moreover, EPA believes that whether emissions "contribute significantly" depends on a multifactor test, as described below. Thus, section 110(a)(2)(D)(i)(I) does not require the

elimination of all upwind source emissions that impact downwind air quality problems, but only those amounts of emissions that, based on a multi-factor test, significantly contribute to downwind air quality problems.

d. Multi-factor Test for Determining Significant Contribution. In the NPR, EPA proposed a multi-factor test for determining whether emissions from an upwind State contribute significantly to a nonattainment or maintenance problem downwind. The EPA received numerous comments on the factors. Based on the comments and EPA's further analysis, EPA, in today's action, is continuing the multi-factor approach, with some refinements in response to comments, with respect to the factors EPA considered and the manner in which EPA considered them.

In determining whether emissions from upwind States affected by today's action contribute significantly to downwind nonattainment or maintenance problems, EPA specifically considered the following factors with respect to each such upwind State. These factors were the primary components in EPA's consideration.

The overall nature of the ozone problem (i.e., "collective contribution")

The extent of the downwind nonattainment problems to which the upwind State's emissions are linked, including the ambient impact of controls required under the CAA or otherwise implemented in the downwind areas

The ambient impact of the emissions from the upwind State's sources on the downwind nonattainment problems

The availability of highly cost effective control measures for upwind emissions.

The first three of these factors are related to air quality; the fourth is related to costs.

In addition, EPA generally reviewed several other considerations before concluding that upwind emissions contribute significantly to downwind nonattainment. The EPA did not consider it necessary, or did not have adequate information, to apply each of these factors with specificity with respect to each upwind State's emissions. In addition, in some instances, EPA did not have quantitative information to assess certain of these factors, and instead relied on qualitative information. These considerations were secondary aspects of EPA's analysis. They include:

The consistency of the regional reductions with the attainment needs of the downwind areas with nonattainment problems.

The overall fairness of the control regimes required of the downwind and upwind areas, including the extent of the controls required or implemented by the downwind and upwind areas.

General cost considerations, including the relative cost-effectiveness of additional downwind controls compared to upwind controls.

All of these factors and considerations are described in the following sections.

e. Air Quality Factors. As noted above, EPA specifically considered three air quality factors with respect to each upwind State, which factors, in conjunction with the cost factor discussed in the next section, were the primary components in EPA's consideration:

The overall nature of the ozone problem (i.e., "collective contribution").

The extent of the downwind nonattainment problems to which the upwind State's emissions are linked,

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including the ambient impact of controls required under the CAA or otherwise implemented in the downwind areas

• The ambient impact of the emissions from the upwind State's sources on the downwind nonattainment problems

(1) Collective Contribution. As indicated elsewhere, ozone generally results from the collective contribution of emissions from numerous sources over a large geographic area. For example, for urban nonattainment areas under the 1-hour NAAQS, the downwind sources, comprise numerous stationary sources as well as mobile on-road sources, mobile off-road sources, and consumer and commercial products. Further, additional contributions are made by numerous upwind States, both adjacent to and further away from the nonattainment area itself. The fact that virtually every nonattainment problem is caused by numerous sources over a wide geographic area is a factor suggesting that the solution to the problem is the implementation over a wide area of controls on many sources, each of which may have a small or unmeasureable ambient impact by itself.

(2) Extent of Downwind Nonattainment Problems, Including Ambient Impact of Required Controls. In determining whether a downwind area has a nonattainment problem under the 1-hour standard to which an upwind area may be determined to be a significant contributor, EPA determined whether the downwind area currently has a nonattainment problem, and whether that area area would continue to have a nonattainment problem as of the year 2007 assuming that in that area, all controls specifically required under the CAA were implemented, and all required or otherwise expected Federal measures were implemented. If, following implementation of such required CAA controls and Federal measures, the downwind area would remain in nonattainment, then EPA considered that area as having a nonattainment problem to which upwind areas may be determined to be significant contributors.

Thus, this analytical approach assumes that downwind areas implement all required controls and receive the benefit of reductions from Federal measures, and yet have a residual nonattainment problem (prior to the implementation of the regional reductions required by today's action). The fact that a nonattainment problem persists, notwithstanding fulfillment of CAA requirements by the downwind sources, is a factor suggesting that it is reasonable for the upwind sources to be part of the solution to the ongoing nonattainment problem.

The EPA undertook a comparable analysis with respect to the 8-hour NAAQS. That is, the major urban areas in the northeast, midwest, and south that are violating the 8-hour NAAQS are designated nonattainment under the 1-hour NAAQS as well. After these areas are designated nonattainment under the 8-hour NAAQS, they will become subject to the control requirements of section 172(c). However, for these areas, the section 172(c) requirements do not, by their terms, impose any specific controls other than what these areas have already implemented to fulfill the requirements under section 182 attendant to their designation and classification under the 1-hour NAAQS. Accordingly, the same air quality modeling analyses that shows residual nonattainment for at least one of the urban areas linked to each upwind State under the 1-hour standard shows residual nonattainment for those areas under the 8-hour NAAQS. Indeed, modeling analyses relied on for today's action indicate residual nonattainment for the major urban areas even after

the implementation of regional reductions comparable to those required today. [26]

\26\ The presence of residual nonattainment in major urban areas after their implementation of specifically required CAA controls supports the regional reductions required under today's action. Those regional reductions allow the major urban areas to progress towards attainment under the 8-hour NAAQS, and, at the same time, significantly ameliorate the nonattainment problems under the 8-hour NAAQS for numerous other areas. In fact, EPA projections indicate that numerous areas with nonattainment problems will achieve attainment of the 8-hour NAAQS as a result of the regional reductions.

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(3) Ambient Impact of Emissions from the Upwind Sources. In today's action, EPA examined the impact of numerous upwind States on numerous downwind areas with nonattainment problems.

Under the 1-hour NAAQS, EPA conducted various air quality modeling analyses that examined the impact of emissions from sources in each upwind State on ozone levels in downwind nonattainment areas, in light of the impact of emissions from sources in other upwind States on the downwind area's nonattainment problem. The EPA assessed the frequency and magnitude of each upwind State's contribution to downwind nonattainment problems. Some of the modeling analyses also permitted determining the magnitude of the average contribution and the peak contribution from each upwind State, as well as the percentage of each upwind State's contribution to the downwind nonattainment problem.

The EPA determined that for each upwind State affected by today's action, its contribution to a downwind nonattainment problem, in conjunction with the contribution from other upwind States, comprised a relatively large percentage of the nonattainment problem. The EPA further determined that, in this context, the impacts from each affected upwind State's NOx emissions are sufficiently large and/or frequent so that the amounts of that State's emissions should be considered to be significant contributions, depending on the cost factor and other relevant

considerations. For most upwind States, EPA conducted two types of modeling--UAM-V and CAMx--that isolated the impact of emissions from the upwind State alone on downwind nonattainment.

The EPA also conducted much the same analysis to determine the impact of emissions from each upwind State on ozone levels in downwind States under the 8-hour NAAQS. Because nonattainment problems under the 8-hour NAAQS are widespread, and because EPA has not designated individual nonattainment areas, EPA focused this part of its inquiry on the upwind State's impact on the entire downwind State.

The EPA's analysis under both the 1-hour and 8-hour NAAQS led EPA to conclude that, in light of both the collective contribution nature of the ozone problem, and the fact that downwind areas continue to suffer a nonattainment problem even after implementation of all required CAA measures and Federal measures, emissions from each of the affected upwind States have a sufficiently large and/or frequent ambient impact such that those emissions contribute significantly to nonattainment downwind, depending on the availability of highly cost-effective measures and on other considerations discussed below.

f. Determination of Highly Cost-effective Reductions and of Budgets. After determining the degree to which NOx emissions, as a whole from the particular upwind States, contribute to downwind nonattainment or maintenance problems, EPA then determined whether any amounts of the NOx emissions may be eliminated through controls that, on a cost-per-ton basis, may be considered to be highly cost effective. By examining the cost effectiveness of recently promulgated or proposed NOx controls, EPA determined that an average of approximately $2,000 per ton removed

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is highly cost effective. The EPA then determined a set of controls on NOx sources that would cost no more than an average of $2,000 per ton reduced. Specifically, EPA determined that one set of these controls would include a cap-and-trade program for (i) electricity generating boilers and turbines larger than 25 Mwe ("large EGUs"), and (ii) large non-electricity generating industrial boilers and turbines ("large non-EGU boilers and turbines"). The application of an

emission rate of 0.15 lb/mmBtu and 1995-1996 utilization for EGUs and 60 percent for large non-EGUs to the emissions projected to occur in 2007 including growth and CAA measures, led to the determination of the amounts to be reduced. The remaining amount is a State's budget.

The EPA further determined that additional highly cost-effective controls are also available for cement manufacturing sources and internal combustion engines. On the basis of reasonable assumptions concerning growth to the year 2007, EPA then determined the amounts of emissions from these source categories that would be eliminated with those controls.

The EPA further determined that there were no other controls on other NOx sources that qualify as highly cost effective (although several controls are reasonably cost-effective).

On the basis of the determinations just described for the various source categories, EPA determined an amount of NOx emissions that may be eliminated through these highly cost-effective measures. Because EPA had also determined that the NOx emissions from the affected upwind States have a large and/or frequent impact on downwind nonattainment or maintenance problems, EPA concludes that the amount of NOx emissions from those States that can be eliminated through application of highly cost-effective control measures contributes significantly to nonattainment or maintenance problems downwind.

Under section 110(a)(2)(D)(i)(I), the SIP must include "adequate provisions prohibiting" sources from emitting these 'amounts." Because no highly cost-effective controls are available to eliminate the remaining amounts of NOx emissions, EPA concludes that those emissions do not contribute significantly to downwind nonattainment or maintenance problems. As indicated below and in Section III, there are cost-effective alternatives available to States that choose not to adopt all of the highly cost-effective measures on which EPA based its selection of the significant amounts of NOx emissions.

To implement EPA's determinations, each affected upwind State is required to submit for EPA approval SIP controls projected to be sufficient, by the year 2007, to eliminate the amount of NOx emissions in the State that EPA determined contributes significantly to nonattainment. The EPA determined this amount of reductions, for each affected

upwind State, as follows: EPA first determined the amount of NOx emissions in that State by the year 2007, based on assumptions concerning both growth and emissions controls that are required under the CAA or that will be implemented due to Federal actions (the "2007 base case"). Second, EPA applied the control measures identified as highly cost effective to the 2007 base case amount for the appropriate source categories. The amount of NOx emissions remaining in the State after application of controls to the affected source categories constitutes the 2007 budget. The difference between the 2007 base case and the 2007 budget is the amount of NOx emissions in that State by the year 2007 that EPA has determined to contribute significantly to nonattainment and that, therefore, the SIPs must prohibit.

The upwind State's SIP revision due in response to today's action must provide controls that, on the basis of the same assumptions (including concerning growth) made by EPA in determining the budget, would limit NOx emissions in the year 2007 to no more than the 2007 budget. The State has full discretion in selecting the controls, so that it may choose any set of controls that would assure achievement of the budget.

As EPA stated in the NPR:

States are not constrained to adopt measures that mirror the measures EPA used in calculating the budgets. In fact, EPA believes that many control measures not on the list relied upon to develop EPA's proposed budgets are reasonable--especially those, like enhanced vehicle inspection and maintenance programs, that yield both NOx and VOC emissions reductions.[27] Thus, one State may choose to primarily achieve emissions reductions from stationary sources while another State may focus emission reductions from the mobile source sector.

\27\ As indicated in the NPR, EPA considers that measures may be reasonable in light of their reduction of VOC and NOx emissions, even though their cost-effectiveness in terms of cost per NOx emissions removed is relatively high (62 FR 60346-48).

(62 FR 60328).

The EPA believes that its overall approach derives further support from the mandate in section 110(a)(2)(D) that each SIP include provisions prohibiting "any source or other type of emissions activity within the State from emitting any air pollutant in amounts' that adversely affect downwind areas. The phrase "any source or other type of emissions activity" may be interpreted to require that the SIP regulate all sources of emissions to assure that the total amount of emissions generated within the State does not adversely affect downwind areas. By its terms, the phrase covers all emitters of any kind because every emitter--stationary, mobile, or area--may be considered a "source or other type of emissions activity." This interpretation is consistent with the legislative history of the phrase. Prior to the CAA Amendments of 1990, the predecessor to section 110(a)(2)(D), which was section 110(a)(2)(E), referred to "any stationary source within the State." In the 1990 Amendments, Congress revised the phrase to read as it currently does. A Committee Report explained, "Where prohibitions in existing section 110(a)(2)(E) apply only to emissions from a single source, the amendment includes "any other type of emissions activity," which makes the provision effective in prohibiting emissions from, for example, multiple sources, mobile sources, and area sources." V Leg. Hist. 8361, S. Rep. No. 228, 101st Cong., 1st Sess. 21 (1989).

For reasons explained below, if an upwind State chooses to achieve all or a portion of the required reductions from large EGUs or large non-EGU boilers and turbines, then the SIP must include a mass emissions limitation for those sources computed with reference to certain growth assumptions and the emission rate limits chosen by the State. The EPA recommends that this mass limitation, or cap, be accompanied by a trading program. Any such cap-and-trade program must be established by May 1, 2003. If the State chooses to achieve all or a portion of the required reductions from other sources, then the State must implement controls, by the year 2003, on those other sources that are projected to achieve the required level of reductions, based on certain assumptions (including growth), in the year 2007. The controls on these other sources may be rate-based, and no emissions cap on them is required. By the year 2007, any applicable mass emissions limitation for large EGUs or large non-EGU boilers and turbines must continue to be met, and any applicable controls on other sources must continue to be implemented. The amount of the

2007 overall budget is used to compute the level of controls that would result in the appropriate amount of emissions reductions, given assumptions concerning, for example,

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growth. To this extent, the 2007 overall budget is an important accounting tool. However, the State is not required to demonstrate that it has limited its total NOX emissions to the budget amounts. Thus, the overall budget amount is not an independently enforceable requirement.

g. Other Considerations in Determination of Significant
Contribution. The EPA reviewed several other considerations in support of its determination that the specified amounts of emissions from the affected upwind States contribute significantly to nonattainment downwind.

(1) Consistency of Regional Reductions with Downwind Attainment Needs. The EPA conducted modeling analyses of emission reductions of virtually the same magnitude as the regional reductions required under today's action. Although the impact on any downwind ozone problem of each upwind State's emissions reductions alone may be relatively small, the impact of those reductions, when combined with the reductions from the other States, is substantial. Based on this modeling, EPA determined that the regional reductions allow downwind nonattainment areas under the 1-hour NAAQS to make appreciable progress towards attainment. The EPA further determined that under the 8-hour NAAQS, many areas with nonattainment problems are expected to reach attainment based solely on the regional reductions, and that other (primarily urban) areas would benefit from the regional reductions but are expected to experience residual nonattainment. EPA further determined that none of the upwind States affected by today's action are affected by "overkill," that is, required reductions that are more than necessary to ameliorate downwind nonattainment in every downwind area affected by that upwind State.

(2) Fairness. The EPA also considered the overall fairness of the control regimes required of the downwind and upwind areas, including the extent of the controls required or implemented by the downwind and upwind areas. Most broadly, EPA believes that overall notions of fairness suggest

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designed to reduce ozone. Fu
complied with almost all of the
under the CAA, and generally a
with their remaining obligations
provisions provide assurance
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the midwest and south hav
problems and have incurred few

(3) General Cost Co
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or that in the past have had, n
the 1-hour NAAQS, or that
Transport Region (OTR), have
costs. The controls already impl
be among the less expensiv
described in more detail below
general, the next set of control
downwind nonattainment are
would cost approximately $
comparison, EPA has determin
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costs since the early 1970s.
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specific control requirements
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The CAA's sanctions and FIP
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eral downwind areas with

The EPA did not have available, and was not presented with, meaningful quantitative information indicating the cost-effectiveness of the regional reductions required today in light of their ambient impact downwind (e.g., the cost of emissions reductions per ppb improvement in ambient ozone levels in a downwind nonattainment area). This lack of information limited the extent to which EPA could rely on this consideration in making its determinations.

The various considerations just discussed point in the same direction as the other factors described above concerning air quality and costs. These factors and considerations lead EPA to conclude that the amounts of each upwind State's emissions that may be eliminated through highly cost-effective measures contribute significantly to nonattainment or maintenance problems downwind.

h. Interfere with Maintenance. Once a nonattainment area has attained the NAAQS, it is required to maintain that standard (e.g., sections 107(d)(3)(E)(iv), 110(a)(1)). Section 110(a)(2)(D)(i)(I) also requires that SIPs contain adequate provisions prohibiting amounts of emissions that "interfere with maintenance by * * * any [downwind] State." The EPA explained and applied this requirement in the NPR as follows:

This [interfere-with-maintenance] requirement * * * does not, by its terms, incorporate the qualifier of "significantly." Even so, EPA believes that for present purposes, the term "interfere" should be interpreted much the same as the term "contribute significantly," that is, through the same weight-of-evidence approach.

With respect to the 1-hour NAAQS, the "interfere-with-maintenance" prong appears to be inapplicable. The EPA hasdetermined that the 1-hour NAAQS will no longer apply to an area after EPA has determined that the area has attained that NAAQS. Under these circumstances, emissions from an upwind area cannot interfere with maintenance of the 1-hour NAAQS.

With respect to the 8-hour NAAQS, the "interfere-with-maintenance" prong remains important. After an area has reached attainment of the 8-hour NAAQS, that area is obligated to maintain that NAAQS. (See sections 110(a)(1) and 175A.) Emissions from sources in an upwind area may interfere with that maintenance.

The EPA proposes to apply much the same approach in analyzing the first component of the "interfere-with-

maintenance" issue, which is identifying the downwind areas whose maintenance of the NAAQS may suffer interference due to upwind emissions. The EPA has analyzed the "interfere-with-maintenance" issue for the 8-hour NAAQS by examining areas whose current air quality is monitored as attaining the 8-hour NAAQS [or which have no current air quality monitoring], but for which air quality modeling shows nonattainment in the year 2007. This result is projected to occur, notwithstanding the imposition of certain controls required under the CAA, because of projected increases in emissions due to growth in emissions generating activity. Under these circumstances, emissions from upwind areas may interfere with the downwind area's ability to attain. Ascertaining the impact on the downwind area's air quality of the upwind area's emissions aids in determining whether the upwind emissions interfere with maintenance . . .

* * * *

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upwind sources, and different downwind effects.

Several commenters asserted that these prior rulemakings and cases are relevant to today's action, and compel EPA to conclude that the emissions from the upwind States affected by today's action do not contribute significantly to downwind nonattainment or maintenance problems. The EPA disagrees that these earlier determinations are controlling and that these earlier determinations are inconsistent with today's action. The EPA responds to these comments in detail in the Response to Comment document.

B. Alternative Interpretation of Section 110(a)(2)(D)

As discussed above, in the NPR EPA advanced an alternative interpretation of section 110(a)(2)(D) (62 FR 60327). Under this alternative interpretation, EPA would determine the level of emissions that significantly contribute to nonattainment downwind based on factors relating to the entire amount of upwind emissions from a particular upwind State and their ambient impact downwind. The EPA would then determine what emissions reductions must be required to adequately mitigate that significant contribution based on factors relating to cost effectiveness of reductions and attainment needs downwind.

The EPA continues to believe that this alternative interpretation remains a permissible interpretation of the statute for the reasons described in the NPR (62 FR 60327). In any event, it should be noted that for purposes of today's action, EPA finds no practical difference between the requirements that would result from the interpretation of section 110(a)(2)(D) adopted today and those that would result from the alternative interpretation described in the NPR. That is, even under the alternative interpretation, today's rulemaking would contain the same findings and require the same SIP revisions as under the interpretation adopted today (62 FR 60327).

C. Weight-of-Evidence Determination of Covered States

As discussed above, EPA applied a multi-factor approach to identify the amounts of NOX emissions that contribute significantly to nonattainment. The EPA evaluated three air quality factors fo"each upwind jurisdiction (hereafter referred to as "States" or "upwind States") to determine whether each has emissions whose contributions to downwind nonattainment problems are large and/or frequent enough to be of concern. Further, for those States whose emissions are large and/or frequent enough to be of concern, EPA applied highly cost-effective controls to determine the amount of NOx in upwind States which significantly contributes to nonattainment in, or interferes with maintenance by, a downwind State. The EPA also generally reviewed several other considerations before drawing final conclusions. Even though the actual finding of significant contribution applies only to the portion of a State's emissions for which EPA has identified highly cost-effective controls, for ease of discussion, the term "significant" (or like term) is used in the discussion in this section to characterize the emissions of each upwind State that make a large and/or frequent contribution to onattainment in downwind States sufficient to warrant eliminating a portion of its emissions equivalent to what can be removed through those controls.

The purpose of this section is to describe the technical analyses performed by EPA to (a) quantify the air quality contributions from emissions in each upwind State on both 1-hour and 8-hour nonattainment, as well as 8-hour maintenance, in each downwind State, and (b) determine whether these contributions are significant.

In the proposed weight-of-evidence approach, EPA specifically applied several factors to each upwind State, as discussed in Section II.A.3.c, Definition of Significant Contribution. These factors include:

The overall nature of ozone problem (i.e., "collective contribution");

The extent of the downwind nonattainment problems to which the upwind State's emissions are linked, including the ambient impact of controls required under the CAA or otherwise implemented in the downwind areas; and

The ambient impact of the emissions from the upwind State's sources on the downwind nonattainment problems.

As part of the analysis of these factors, EPA considered the findings from OTAG's technical analyses, as well as the findings from a number of other studies performed by OTAG participants independent of OTAG. The major findings from these analyses are described below. This is followed by an overview of the approach used by EPA in the proposal for considering the above factors to identify States that make a significant contribution to downwind nonattainment. The comments and EPA's response to comments on EPA's weight-of-evidence proposal are then discussed. Following that discussion, the results of additional State-by-State UAM-V modeling and State-by-State CAMX 31 source apportionment modeling performed by EPA in response to comments are summarized.32 The EPA's analysis of the modeling results in terms of the significance of the contributions of upwind States to downwind nonattainment is presented in Section II.C.4, Confirmation of States Making a Significant Contribution to Downwind Nonattainment.

\31\ Comprehensive Air Quality Model with Extensions.
\32\ The UAM-V and CAMX models are described in the Air Quality Modeling TSD.

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1. Major Findings From OTAG-Related Technical Analyses

The major findings from the air quality and modeling analyses by OTAG and individual OTAG participants that are most relevant to today's rulemaking are as follows:

several different scales of transport (i.e., intercity, intrastate, interstate, and inter-regional) are important to the formation of high ozone in many areas of the East;

emissions reductions in a given multistate region/subregion have the most effect on ozone in that same region/subregion;

emissions reductions in a given multistate region/subregion also affect ozone in downwind multistate regions/subregions;

downwind ozone benefits decrease with distance from the source region/subregion (i.e., farther away, less effect);

downwind ozone benefits increase as the size of the upwind area being controlled increases, indicating that there is a cumulative benefit to extending controls over a larger area;

downwind ozone benefits increase as upwind emissions reductions increase (the larger the upwind reduction, the greater the downwind benefits);

a regional strategy focusing on NOX reductions across a broad portion of the region will help mitigate the ozone problem in many areas of the East;

both elevated and low-level NOX reductions decrease ozone concentrations regionwide;

there are ozone benefits across the range of controls considered by OTAG; the greatest benefits occur with the most emissions reductions; there was no ``bright line'' beyond which the benefits of emissions reductions diminish significantly;

even with the large ozone reductions that would occur if the most . . .

* * * *

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TABLE II–3.–PERCENT CONTRIBUTION FROM UPWIND STATES TO 1-HOUR NONATTAINMENT IN NEW YORK CITY

Downwind Area: New York City	Percent of total manmade emissions over 4 episodes[1]	Highest single episode percent contribution[2]
OH	4	6
VA	4	8
WV	3	7
IL	2	3
IN	1	2
KY	1	3
MI	1	4

MO	1	2
NC	1	2
TN	1	1
Total Amount from All Other States, combined	3	NA.

\1\ These values are based on CAMx Metric 3 calculated across all 4 episodes.
\2\ These values are based on CAMx Metric 3 calculated for each episode individually. These values do not add up to 100 percent.
\3\3. Total contribution from the State(s) in which the Nonattainment area is located.
\4\ 4. Not applicable.

The extent of New York City's nonattainment problem and the nature of the contributions from upwind States were considered in determining whether the values of the metrics indicate large and/or frequent contributions for individual upwind States. Specifically, additional controls beyond the local and upwind NOx reductions which are part of the regional NOx strategy may be needed to solve New York City's 1-hour nonattainment problem. Also, the total contribution from all upwind States is large and there is no single State or small number of States which comprise this total upwind portion. In this regard, the contributions to New York City from some States may not appear to be individually "high" amounts. However, (as described below) these contributions, when considered together with the contributions from other States (i.e., the collective contribution) produce a large total contribution to nonattainment in New York City.

The EPA evaluated the magnitude, frequency, and relative amount of contribution from emissions in individual upwind States to determine which States contribute significantly to 1-hour nonattainment in New York City. The UAM-V and CAMx metrics which quantify each upwind State's contribution to New York City for each of the three factors are provided in the Air Quality Modeling TSD and described below. Examination of the values for these metrics indicates that the upwind States can be divided into three general groups, based on the magnitude, frequency, and relative amount of contribution. The first group contains those upwind States for which the UAM-V and CAMx metrics all clearly indicate a significant contribution to 1-hour

nonattainment in New York City. The second group contains those States for which the CAMx and UAM-V metrics are not quite as consistent, but overall the metrics indicate a significant contribution to 1-hour nonattainment in New York City.49 The third group contains those States for which the CAMx and UAM-V metrics clearly indicate that the impacts do not make a significant contribution to New York City.

\49\ For New York City, each of the "Group 2" States were found to make a significant contribution. However, this was not the case for all of the Group 2 linkages in other nonattainment areas. For example, the contribution from Kentucky to Philadelphia and the contribution from Tennessee to Baltimore were Group 2 situations in which EPA determined that the contributions were not significant.

Group 1 Upwind States:

The CAMx and UAM-V metrics all clearly indicate that emissions from Maryland/Washington, DC/Delaware, Ohio, Pennsylvania, Virginia, and West Virginia make large and/or frequent contributions to 1-hour nonattainment in New York City. For Pennsylvania the magnitude of contribution, as indicated by the highest daily average contribution (CAMx Metric 3), is 25 ppb and the relative amount of contribution is 18 percent (CAMx Metric 4). For the other upwind areas, the magnitude of the contributions range from 9 ppb to 15 ppb (CAMx Metric 3, highest daily average contributions) with contributions in the range of 5 ppb to 10 ppb--from Ohio, Virginia, and West Virginia (UAM-V Metric 2, maximum "ppb" contribution). In terms of the frequency of the contribution, 7 percent to 11 percent of the total number of grid-hours>=125 ppb in New York City receive contributions of 10 ppb from each of these States (CAMx Metric 1 and 2). Also, the relative amounts of the contribution are in the range of 6 percent to 8 percent (CAMx Metric 4, highest single-episode average percent contribution) and the total contribution from each of three States (i.e., Ohio, Virginia, and West Virginia) is large compared to the total amount of nonattainment, ranging from 8 percent to 11 percent (UAM-V Metric 3).

Group 2 Upwind States:

The CAMx and UAM-V metrics are somewhat less consistent on the extent of contributions from each of 5 States:

Kentucky, Illinois, Indiana, Michigan, and North Carolina. None of the metrics for either model indicate extremely low or extremely high contributions. Rather, for these States most of the metrics indicate relatively high contributions while a few metrics indicate relatively low contributions. The rationale used by EPA for evaluating the contributions from these States involved comparing and contrasting each piece of data for these States on an individual "upwind State-by-upwind State" basis and as a group (i.e., for all 5 States, together) in order to weigh the relative magnitude and frequency of the contributions for making a determination of significance.

UAM-V Metrics--For each of these 5 States the "weakest" factor is the magnitude contribution (UAM-V Metric 2) in that the highest contributions are in the range of 2 to 5 ppb. The other UAM-V Metrics, however, indicate that the contributions from each State are of a larger frequency and relative amount. Specifically, four of these States (Kentucky, Indiana, Illinois, and

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Michigan) each contribute 2 to 5 ppb to as many as 3 percent to 4 percent of the exceedences in New York City (UAM-V Metrics 1 and 2). While North Carolina contributes to somewhat fewer exceedences (2 percent), this slight weakness is out-weighed by the relative amount of contribution (UAM-V Metrics 3 and 4) which indicates that the total contribution from North Carolina alone is equivalent to 3 percent of the total "ppb" >=125 ppb and 4 percent of the population-weighted "ppb" >=125 ppb in New York City. For Indiana, Illinois, and Michigan the relative amount of contribution (UAM-V Metrics 3 and 4) is also relatively high and ranges from 3 percent to 5 percent. The relative amount of contribution from Kentucky is somewhat weaker at 2 percent.

CAMx Metrics--For Illinois, all of the CAMx metrics indicate relatively large and/or frequent contributions, as described below. For Kentucky, Indiana, Michigan, and North Carolina the magnitude of contribution is large, as indicated by the maximum contribution which ranges from 6 ppb (Indiana) to 11 ppb (North Carolina). Also, the highest daily average contribution from Kentucky, Michigan, and North Carolina are all in the range of 5 ppb to 7 ppb. In terms of the frequency of contribution, Indiana and North Carolina contribute in the range of 5 ppb to 10 ppb to 3 percent and 6

percent of the exceedences, respectively, in New York City. For Kentucky, Indiana, Michigan, and North Carolina the relative amounts of contribution is somewhat mixed in that the 4-episode average percent contribution is only 1 percent, but the highest single-episode average percent contributions are higher at 2 percent from both Indiana and North Carolina, 3 percent from Kentucky, and 4 percent from Michigan (CAMx Metric 4).

Overall contributions considering UAM-V and CAMx Metrics--Considering the CAMx and UAM-V metrics, as described below, the majority of the contribution factors indicate that, overall, each of the Group 2 States contributes significantly to 1-hour nonattainment in New York City.

Kentucky--

Metrics indicating relatively high and/or frequent contributions:

--Magnitude of Contribution: the maximum contribution from CAMx is 9 ppb (CAMx Metric 2) and highest daily average contribution is 7 ppb (CAMx Metric 3);

--Frequency of Contribution: 4 percent of the exceedences receive contributions of more than 2 ppb (UAM-V Metrics 1 and 2); and

--Relative Amount of Contribution: the highest single-episode average contribution is 3 percent (CAMx Metric 4).

Metrics indicating relatively low and/or infrequent contributions:

--Magnitude of Contribution: the maximum contribution from UAM-V is 2 ppb; and

--Relative Amount of Contribution: the 4-episode average percent contribution is 1 percent (CAMx Metric 4).

Indiana--

Metrics indicating relatively high and/or frequent contributions:

--Magnitude of Contribution: the maximum "ppb" contribution is 6 ppb (CAMx Metric 2);

--Frequency of Contribution: 4 percent of the exceedences receive contributions of more than 2 ppb (UAM-V Metrics 1 and 2) ; and

--Relative Amount of Contribution: the total "ppb" contribution is equivalent to 3 percent of total amount of nonattainment (UAM-V Metric 3).

Metrics indicating relatively low and/or infrequent contributions:
--Magnitude of Contribution: the maximum contribution from is 2 ppb (UAM-V Metric 2); and
--Relative Amount of Contribution: the 4-episode average percent contribution is 1 percent (CAMx Metric 4).

Illinois--

Metrics indicating relatively high and/or frequent contributions:
--Magnitude of Contribution: the maximum contribution is 8 ppb (CAMx Metric 2); the highest daily average contribution is 6 ppb;
--Frequency of Contribution: 3 percent of the exceedences receive contributions of more than 2 ppb; and
--Relative Amount of Contribution: the highest single-episode average contribution is 3 percent (CAMx Metric 4); the total "ppb" contribution is equivalent to 3 percent of total amount of nonattainment.

Metrics indicating relatively low and/or infrequent contributions:
--Magnitude of Contribution: the maximum contribution from UAM-V is 2 ppb.

Michigan--

Metrics indicating relatively high and/or frequent contributions:
--Magnitude of Contribution: the maximum contribution is 7 ppb (CAMx Metric 2); the highest daily average contribution is 5 ppb (CAMx Metric 3);
--Frequency of Contribution: 3 percent of the exceedences receive contributions of more than 2 ppb (UAM-V Metrics 1 and 2); and
--Relative Amount of Contribution: the highest single-episode average contribution is 4 percent (CAMx Metric 4); the total "ppb" contribution is equivalent to 3 percent of the total amount of nonattainment.

Metrics indicating relatively low and/or infrequent contributions:
--Magnitude of Contribution: the maximum contribution from UAM-V is 2 ppb

--Frequency of Contribution: 1 percent of the exceedences receive contributions of 5 ppb or more (CAMx Metrics 1 and 2); and
--Relative Amount of Contribution: the 4-episode average percent contribution is 1 percent (CAMx Metric 4).

North Carolina--

Metrics indicating relatively high and/or frequent contributions:
--Magnitude of Contribution: the maximum contribution is 11 ppb (CAMx Metric 2); the highest daily average contribution is 6 ppb (CAMx Metric 3);
--Frequency of Contribution: 6 percent of exceedences receive contributions of 5 ppb or more (CAMx Metrics 1 and 2); and
--Relative Amount of Contribution: the total "ppb" contribution is equivalent to 3 percent of total amount of nonattainment.

Metrics indicating relatively low and/or infrequent contributions:
--Relative Amount of Contribution: the 4-episode average percent contribution is 1 percent (CAMx Metric 4).

Group 3 Upwind States: The CAMx and UAM-V metrics clearly indicate that the emissions from the following States do not make large and/or frequent contributions to 1-hour nonattainment in New York City:
Alabama, Georgia, Massachusetts, Missouri, South Carolina, Tennessee, and Wisconsin. The rationale for this conclusion is as follows:
--Magnitude of Contribution: all of these upwind States individually contribute less than 2 ppb to 1-hour daily maximum exceedences in New York City (UAM-V Metric 2); the highest daily average contribution was 1 ppb or less from Alabama, Georgia, and Massachusetts, and 2

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ppb from South Carolina, Tennessee, and Wisconsin (CAMx Metric 3); and
--Relative Amount of Contribution: the 4-episode average contributions from Alabama, Georgia, Massachusetts, South Carolina, and Wisconsin are less than 1 percent (CAMx Metric 4); the total contributions from Missouri and Tennessee are each equivalent to 1 percent of the total amount of nonattainment in New York City (UAM-V Metric 3).

Based on the preceding evaluation, EPA believes that emissions in each of the following twelve jurisdictions contribute significantly to 1-hour nonattainment in the New York City nonattainment area: the District of Columbia, Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, North Carolina, Ohio, Pennsylvania, Virginia, and West Virginia.

b. States Which Contain Sources That Significantly Contribute to Downwind Nonattainment. The results of EPA's assessment of the State-by-State UAM-V and CAMx modeling confirms the findings based on subregional modeling that the 23 jurisdictions contribute large and/or frequent amounts to downwind nonattainment under both the 1-hour and 8-hour NAAQS and forms an independent basis for those findings. The specific upwind States which significantly contribute to nonattainment in specific downwind States are listed in Tables II-4 and II-5 for the 1-hour NAAQS and Table II-6 and Table II-7 for the 8-hour NAAQS. The information on the 1-hour contribution linkages are presented by upwind State in Table II-4 and by downwind State in Table II-5. In Table II-4 the upwind States are each listed in the first column and the downwind States to which each upwind State contributes significantly are listed in the second column. In Table II-5, the same information is presented by downwind State. In this table, each downwind State is listed in the first column and the upwind States that contribute to that downwind State are listed in the second column. The 8-hour contribution linkages are presented by upwind State in Table II-6 and by downwind State in Table II-7.

Table II-4.--Downwind States for Which Upwind States Contain Sources That Contribute Significantly to 1-Hr Nonattainment \1\

Upwind state	Downwind states
Alabama	GA, IL*, IN*, MI*, TN, WI*.
Connecticut	ME, MA, NH.
Delaware	CT, ME, MA, NH*, NJ, NY, PA, RI, VA
District of Columbia	CT, ME, MA, NH*, NJ, NY, PA, RI, VA
Georgia	AL, TN.
Illinois	CT*, IN, MD, NJ*, NY, MI, MO, WI*.

Indiana	CT*, DE*, DC*, IL*, KY, MD, NJ*, NY, MI,OH, VA*, WI*.
Kentucky	AL, CT*, DC*, GA, IL*, IN, MD, MI*, NJ, NY, MO, OH, VA, WI*.
Maryland	CT, ME, MA, NH*, NJ, NY, PA, RI, VA
Massachusetts	ME, NH.
Michigan	CT, DC*, MD, NJ, NY, VA*.
Missouri	IL, IN, MI, WI*.
New Jersey	CT, ME, MA, NH, NY, PA, RI.
New York	CT, ME, MA, NH, NJ, RI.
North Carolina	CT*, DC*, GA, KY, MD, NJ, NY, OH, PA, VA*.
Ohio	CT, DE, DC*, KY, MD, MA, NH*, NJ, NY, PA, RI, VA.
Pennsylvania	CT, DE, DC, ME, MD, MA, NH, NJ, NY, RI, VA.
Rhode Island	ME, MA, NH.
South Carolina	AL, GA, TN.
Tennessee	AL, GA, IL*, IN, KY, MI*, OH, WI*.
Virginia	CT, DE, DC, KY*, MD, MA, NH*, NJ, NY, PA, RI.
West Virginia	CT, DE, DC, MD, MA, NJ, NY, PA, RI, VA.
Wisconsin	IL*, IN*, MI* .

\1\ States marked with an asterisk (*) are included because they are part of an interstate nonattainment area that receives a contribution from the upwind State. New Hampshire is included because it is part of the combined Boston/Portsmouth area; Connecticut and New Jersey are included because they are part of the New York City area; Kentucky is included because it is part of the Cincinnati area; Delaware is included because it is part of the Philadelphia area; Illinois is included because it is part of the St. Louis area; Illinois, Indiana, Michigan, and Wisconsin are included because they are part of the Lake Michigan area; and Maryland, Virginia, and the District of Columbia are included because they are part of the Washington, DC area.

Table II-5.--Upwind States that Contain Sources that Contribute Significantly to 1-Hr Nonattainment in Downwind States\1\

Downwind state	Upwind states
Alabama	GA, KY, SC, TN.
Connecticut	DE, DC, IL*, IN*, KY*, MD, MI*, NJ, NY, NC*, OH, PA, VA, WV.
Delaware	IN*, OH, PA, VA, WV.
District of Columbia	IN*, KY*, MI*, NC*, OH*, PA, VA, WV.
Georgia	AL, KY, NC, SC, TN.
Illinois	AL*, IN*, KY*, MO, TN*, WI*.
Indiana	AL*, IL, KY, MO, TN, WI*.
Kentucky	IN, NC, OH, TN, VA*.
Maine	CT, DE, DC, MD, MA, NJ, NY, PA, RI.
Maryland	IL, IN, KY, MI, NC, OH, PA, VA, WV.
Massachusetts	CT, DE, DC, MD, NJ, NY, OH, PA, RI, VA, WV.
Michigan	AL*, IL, IN, KY*, MO, TN*, WI*.
Missouri	IL, KY.